

**Ashepoo-Combahee-Edisto (ACE) Basin  
National Estuarine Research Reserve  
Management Plan  
2011-2016**



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*This management plan has been developed in accordance with NOAA regulations, including all provisions for public involvement. It is consistent with the congressional intent of Section 315 of the Coastal Zone Management Act of 1972, as amended, and the provisions of the South Carolina Coastal Management Program.*

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## List of Acronyms

<b>ACE</b>	Ashepoo-Combahee-Edisto
<b>ACOE</b>	Army Corps of Engineers
<b>AIWW</b>	Atlantic Intracoastal Waterway
<b>BMP</b>	Best Management Practice
<b>CDMO</b>	Centralized Data Management Office
<b>CFR</b>	Code of Federal Regulations
<b>NSC</b>	NERRS Science Collaborative
<b>COLREGS</b>	Collision Regulations (U.S. Coast Guard)
<b>CTP</b>	Coastal Training Program
<b>CZMA</b>	Coastal Zone Management Act
<b>DMP</b>	Draft Management Plan
<b>DU</b>	Ducks Unlimited
<b>EPA</b>	Environmental Protection Agency
<b>ERD</b>	Estuarine Reserves Division (NOAA)
<b>ECSC</b>	Environmental Cooperative Science Center
<b>EIS</b>	Environmental Impact Statement
<b>GIS</b>	Geographic Information System
<b>GRF</b>	Graduate Research Fellow(ship)
<b>MRD</b>	Marine Resources Division
<b>MRRI</b>	Marine Resources Research Institute
<b>MOU</b>	Memorandum of Understanding
<b>NERR</b>	National Estuarine Research Reserve
<b>NERRS</b>	National Estuarine Research Reserve System
<b>NMFS</b>	National Marine Fisheries Service
<b>NMS</b>	National Marine Sanctuary
<b>NOAA</b>	National Oceanic and Atmospheric Administration
<b>NOS</b>	National Ocean Service
<b>NRCS</b>	Natural Resources Conservation Service
<b>NWI</b>	National Wetlands Inventory
<b>OCRM</b>	Ocean and Coastal Resource Management
<b>ORW</b>	Outstanding Recreational or Ecological Resource Waters
<b>PAGIS</b>	Protected Area Geographic Information System
<b>SCDHEC</b>	South Carolina Department of Health & Environmental Control
<b>SCDNR</b>	South Carolina Department of Natural Resources
<b>SCPRT</b>	South Carolina Parks, Recreation and Tourism
<b>SCR</b>	Seaboard Coastline Railroad
<b>TNC</b>	The Nature Conservancy
<b>USFWS</b>	United States Fish and Wildlife Service
<b>USGS</b>	U.S. Geological Survey
<b>WMA</b>	Wildlife Management Area

## Executive Summary

Since designation the ACE Basin National Estuarine Research Reserve (the Reserve) has made great strides in program development, land stewardship, and development of facilities that support the mission of both the South Carolina Department of Natural Resources (DNR) and the National Oceanographic and Atmospheric Administration (NOAA) through the National Estuarine Research Reserve System (NERRS).

The Reserve has developed significant capacity to help our constituents understand the link between their behaviors, environmental health, and quality-of-life in our coastal communities. The Reserve deploys a research program with substantial capacity to bring the best available science to bear on issues of concern. Maturing education programs associated with the Coastal Training Program (CTP), Stewardship and Education sectors provide key avenues for flow of information to our constituents. Partnerships in the areas of research, education and stewardship provide enhanced capacity to respond to important issues, increased exposure for education themes, and more efficient use of resources.

As a keystone member of the ACE Basin Task Force, the ACE Basin NERR placed major initial focus on land protection efforts that were closely coordinated with business, government, and private partners through the ACE basin Project. As the partnership celebrated its 20<sup>th</sup> anniversary in 2009, total land protected through direct purchase, conservation easement and management agreements approached 200,000 acres. Much of the land within the original boundary of the Reserve has been protected. As a nationally recognized partnership, the ACE Basin Project has now spawned parallel efforts in other watersheds as conservationists, business interests and government continues to affirm through their actions the central role of natural areas to our quality-of-life.

Through partnerships and construction, the Reserve has gained access to facilities that substantially increase our ability to fulfill our mission. Formal partnership with the South Carolina Department of Parks, Recreation and Tourism has facilitated the development of mutually beneficial education facility at the Edisto Island State Park. From this facility, known as the Environmental Learning Center, a wide range of education programs are offered. The Center offers opportunities for self-guided learning along a system of interpretive trails and an exhibit hall located at the Center. The Michael D. McKenzie Field Station, named for the visionary first manager of the ACE Basin NERR, is located in the heart of the ACE Basin and functions as the hub for research activities within the Reserve. The Center provides temporary housing, laboratory space, meeting space, and office space for staff. In addition to a primary focus on supporting research activities the center also has an outdoor classroom where education programs are offered.

The Reserve will continue to build upon a solid foundation of excellent delivery of relevant science-based information, as outlined in the Reserve's strategic plan. Implementation of the Reserve's strategic plan will focus on goals that together build the capacity for the ACE Basin community to act as effective advocates for coastal resources.



Action will be implemented around four priority issues that will define the future of the reserve: habitat conservation, water quality, community resilience, and public access. The plan provides the framework for integration of Reserve functions, and a springboard for partnerships that will enhance the Reserve's role in stewardship of our valuable coastal resources. To achieve our objective the Reserve will implement the strategic plan, which is rooted in the plans of both NOAA and DNR, and interwoven with the key strategies that have served the reserve so well: partnership, voluntary participation, and preservation of traditional uses.

This management plan also serves to formalize the placement of the Botany Bay Plantation Wildlife Management Area/Heritage Preserve in the ACE Basin NERR through noncontiguous expansion of the boundary. This key property on Edisto Island is located a short distance from the Environmental Learning Center and will give the Reserve a diverse outdoor venue easily reached for range of education, research, and stewardship activities. It also provides active participation by the reserve in long-term protection of the South Edisto River watershed.

This management plan describes the priority issues that will be the focus of Reserve activities, a strategic approach to addressing those issues, and illustrates the connections between Reserve activities and key partners. It also includes plans outlining for major programmatic areas (Research, Coastal Training Program, etc.) the approach to achieving the goals and visions of the Reserve. Details of implementation for this management plan may be found in the Reserve's annual grant application.

# Introduction

## **Purpose and scope of plan**

This Management Plan is required by Federal regulation, 15 C.F.R. Part 921.13. The plan describes the Reserve goals and objectives, management issues, and strategies or actions for meeting the goals and objectives. This management plan includes specific plans for administration, research, education/interpretation, public access, construction, acquisition, resource protection, and restoration of habitat. It also addresses priority issues in the ACE Basin National Estuarine Research Reserve (ACE Basin NERR).

Management plans:

- Provide a vision and framework to guide Reserve activities over a five-year period.
- Enable the Reserve and NOAA to track progress and realize opportunities for growth.
- Present Reserve goals, objectives and strategies for meeting the goals to constituents.
- Guide program evaluations under Section 312 of the Coastal Zone Management Act.
- Enable the Reserves to acquire facilities, construction, and land acquisition funds.

This management plan was developed by ACE Basin NERR and NOAA's Estuarine Reserves division staff. The document relies on National Estuarine Research Reserve System (NERRS) program expertise and the information, comments, and recommendations of the general public, participants of public meetings, and guidance of the ACE Basin NERR Advisory Committee. Comments or questions on this document should be directed to:

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# **ACE Basin National Estuarine Research Reserve**

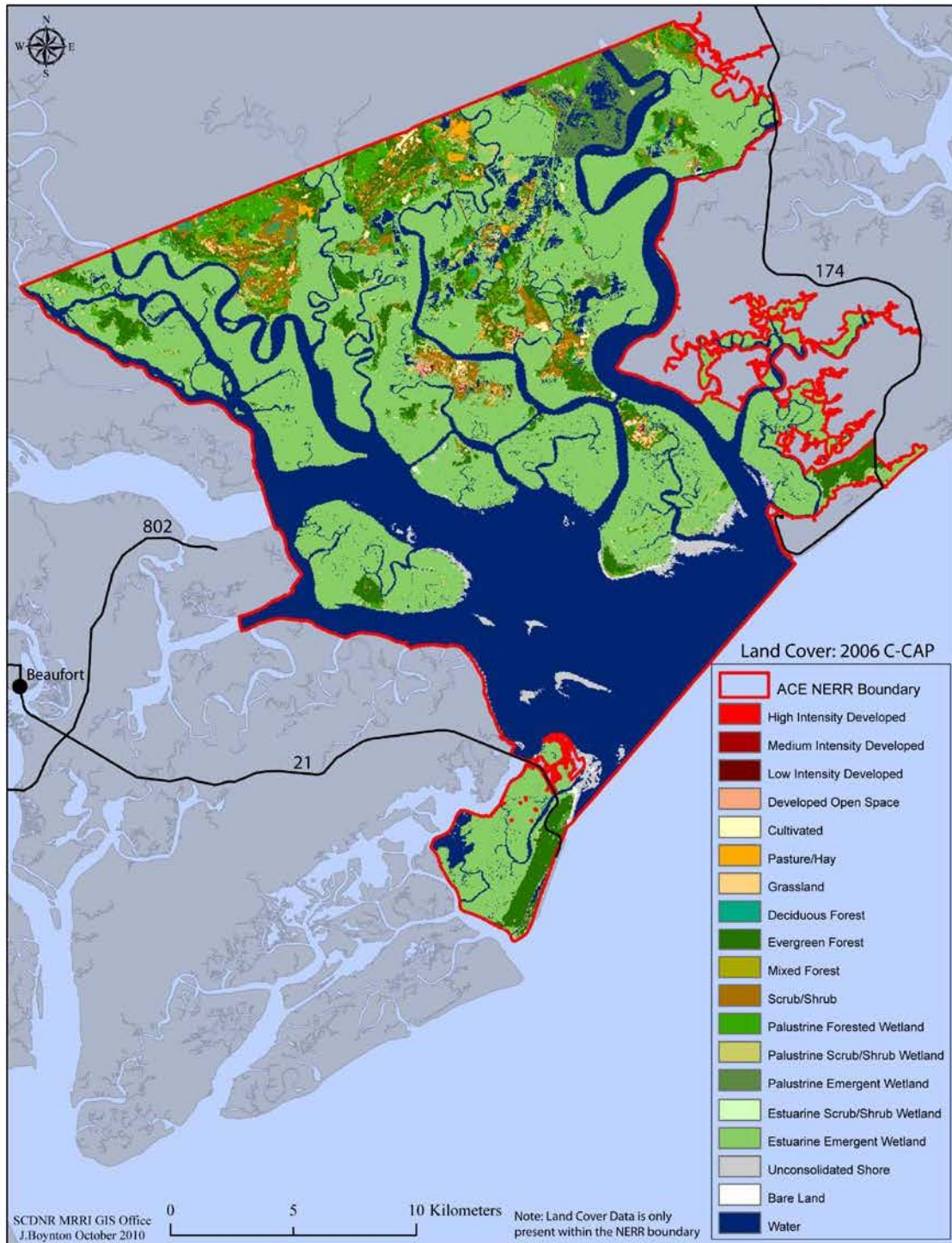
## **Introduction**

The ACE Basin National Estuarine Research Reserve (the Reserve), encompasses approximately 94,621 acres of diverse habitat in Beaufort, Colleton and Charleston Counties in southeastern South Carolina (Figure 1). The Reserve was dedicated in 1992, along with North Inlet-Winyah Bay NERR in Georgetown, SC. The ACE Basin NERR program is administered through a partnership between the Marine Resources Division of the South Carolina Department of Natural Resources (SCDNR) and the Estuarine Reserves Division of NOAA. Since designation, the Reserve has established an on-site presence at the Ft. Johnson complex near Charleston, the McKenzie Field Station at Bennett's Point and the Environmental Learning Center on Edisto Island. Through work conducted at these sites the Reserve has created a unique program that integrates long-term scientific research and monitoring, habitat protection, marine/estuarine education, public outreach, and recreational opportunities with coastal decision-making processes in SC.

The Ashepoo-Combahee-Edisto (ACE) River Basin of South Carolina has a largely undeveloped landscape consisting of extensive, diverse habitats, such as saltwater and brackish-water marshes, maritime forests, upland pines, and bottomland hardwoods. The Reserve includes representative habitats from across the coastal zone. The Reserve serves the ACE Basin in many ways, including protection and conservation of these invaluable habitats. These ecologically important attributes, coupled with management goals that balance conservation of natural resources with economic development and population growth, have made the ACE Basin the focus of national attention. A number of organizations and local citizens have been instrumental in the conservation of the ACE Basin; these include the South Carolina Department of Natural Resources (SCDNR), The Nature Conservancy (TNC), Ducks Unlimited (DU), Colleton County, and the U.S. Fish and Wildlife Service (USFWS). Through these and other organizations, nearly 10 percent of the upland and wetland habitats in the Basin have been permanently protected by purchase and conservation easements. Local community leaders have been responsive to this effort and created the ACE Basin Economic Forum with these goals: establish a framework for responsible growth, enhance awareness and appreciation of the Basin, and promote environmentally compatible business development in the area. This is particularly important considering that a population increase in the ACE Basin will undoubtedly lead to human-induced stress on its ecosystem.

Residential and urban land use in the ACE Basin study area increased by over 4,940 ha (2,000 ac) between 1989 and 1994. Colleton County, in which the majority of the ACE Basin study area is located, is expected to increase from a 1990 population of 34,377 people to over 47,500 people by the year 2015. Stressors associated with population growth include habitat loss, resource depletion, nonpoint source pollution, and nutrient loadings to estuaries and coastal waters. Areas of rapid population growth are centered within an hour's drive north (Charleston) and south (Beaufort) of the ACE Basin study area, creating the potential for rapid urbanization within the area. People are attracted to

the mild climate, rural character, affordable land prices, recreational opportunities, and natural settings available in the vicinity of the ACE Basin, yet population growth and urbanization may affect the very things that attract people to the area.



**Figure 1. Habitats found within the ACE Basin NERR.**

For more detailed information about the physical, biological and socioeconomic character of the Reserve, and the ACE Basin in general, please refer to the ACE Basin Characterization report. The project may be found on the web at: <http://www.dnr.sc.gov/marine/mrri/acechar/execsum.htm>

### **Priority Management Issues**

The ACE Basin is, and will continue to be, challenged by issues arising from activities occurring within and adjacent to its boundaries, as well as those occurring on a global scale. Imminent threats from population growth and development practices in the region provide great potential to negatively impact conditions in the Basin. Further in the future the region will be impacted increasingly by global climate change. These stressors, acting alone or in combination, will challenge and threaten to reshape the ecosystem, including patterns of human inhabitation. Effectiveness in addressing these issues will be determined, in part, by how well the Reserve utilizes and communicates the best available science to enhance understanding of the issues while simultaneously acting as a catalyst for action around those issues.

Reserve staff worked with key partners in the ACE Basin to identify the high priority management issues threatening the ACE Basin today. The issues identified are emblematic of those facing coastal South Carolina more generally, and it is envisioned that progress by the Reserve will translate directly into wider benefits for the region. The issues were identified through formal and informal censuses of key community representatives, professional managers, and community leaders.

Priority issues will provide points of focus for Reserve programs. However, we recognize the limitations of point-in-time surveys and reserve the flexibility to respond to emerging threats as needed. Issues will be prioritized to help the Reserve most effectively utilize available resources. In prioritizing management issues, the Reserve may consider:

- Community attitudes;
- Temporal and spatial extent of the issue;
- Urgency of the issue;
- Political feasibility of resolving the issue;
- Social practicality of working on the issue in the community context; and
- Availability of fiscal, personnel, and equipment resources.

The four priority issues for the Reserve are habitat conservation, water quality, public access and use of reserve-managed resources, and community resilience. Discussion of each priority issue follows.

### Habitat Conservation

The existence of extensive high-quality habitat is the cornerstone of an ecologically sound ACE Basin. In addition to being a common element of flourishing natural systems, such habitat also forms the foundation of quality-of-life for humans in the region. Historically, the connection between thriving human communities and the condition of an ecosystem has been vague, but this has not deterred visionary conservationists from spearheading habitat protection efforts. Additionally, with increasing interest in ecosystem-based approaches, science is leading the way in illuminating the connections between intact natural systems and the issues most relevant to human society, like economics and human health. For these reasons, habitat conservation remains among the top priorities for the Reserve.

Since designation, staff of the Reserve has participated actively in the ACE Basin Task Force, a coalition of conservation-minded entities and individuals from the private, government, and non-profits sectors dedicated to the long-term stewardship of the ACE Basin. This focus has been affirmed and supported by the South Carolina Natural Resources Board, which adopted unanimously in 1999 a resolution establishing habitat conservation as the agency's highest priority. Through efforts of the ACE Basin Task Force approximately 180,000 acres have been conserved through various mechanisms including conservation easement, and in-fee acquisition.

As a key member of the ACE Basin Task Force, the Reserve has been instrumental in acquisition of parcels within the Reserve boundary, while supporting partners' activities throughout the ACE Basin. As a result of these coordinated efforts much of the land within the Reserve boundary has been protected. However, the watershed habitat is still vulnerable to conversion to other land-use types. The magnitude and nature of land-use change that occurs in the future will play a large role in influencing conditions within the Reserve and defining the quality-of-life for its human inhabitants.

In the future we anticipate a more balanced approach in application of education and acquisition to the issue of habitat conservation. Our approach to habitat conservation will need to shift toward a greater focus on influencing the behaviors of the ACE Basin community regarding issues impacting habitat conditions. This approach will include education on why habitats are important, how human actions impact them, and how the community can help conserve these habitats in the future. This shift toward education-based approaches will not, however, diminish our support for land conservation efforts in the Basin.

### Water Quality

Maintaining and improving water quality in the ACE Basin begins with understanding the present condition of our waters and threats to maintaining it. The Reserve is uniquely positioned to access and translate the best available data on the condition of water in the ACE Basin. Through the NERR system-wide monitoring program the Reserve gains perspective on changes in water quality resulting from factors ranging from long-term shifts in climate to short term changes from events such as storms.

The Reserve is well-positioned to bring the best available science to bear in understanding water quality. Because the Reserve is located programmatically within the Marine Division of SCDNR, staff have a close relationship with the Marine Resources Research Institute (MRRI), the research section of the Division. MRRI is home to over 20 Doctorate and Masters level staff actively engaged in providing the information necessary to understand and effectively manage South Carolina's marine resources. Moreover, many Reserve staff are stationed at the Fort Johnson complex in Charleston giving them easy access to researchers with a wide range of expertise including water quality. In addition, the Reserve works closely with the Department of Health and Environmental Control's office of Ocean and Coastal Resource Management (DHEC-OCRM), which has regulatory authority over water quality issues and may provide valuable additional information from their monitoring networks.

The Reserve is well positioned to understand the threats to water quality, but the decisions that impact water quality will remain largely beyond our purview. To be effective in addressing these issues, the Reserve will need to integrate relevant research into outreach and education efforts targeting a wide range of audiences including the general public, students, and key decision-makers. The Reserve must also explore opportunities for mutually beneficial new partnerships with entities that most directly impact natural resources, water quality in particular.

#### Public Access

The Reserve's abundant natural resources and strategic location within the heart of the ACE Basin combine to make it a signature destination for those seeking a high-quality outdoor experience in South Carolina. As we strive to maintain and enhance the condition of the ecosystem through our management, we must recognize and honor the mandate for access that comes with publically managed properties. The key to our success will lie in providing opportunities for high-quality nature-based recreation that is compatible with maintenance of a flourishing ecosystem essential to success of the Reserve.

The Reserve presently provides numerous opportunities for recreation. Boating, fishing, hiking, birdwatching, hunting, camping and numerous other forms of passive recreation all occur within the Reserve. Hunting and fishing are considered "traditional uses" and have been an element of the Reserve's recreational offerings since designation. Moreover, these "traditional uses" are a touchstone of the partnership embodied in the ACE Basin Task Force, the primary engine of conservation in the ACE Basin. Together, passive recreation and "traditional uses" form a rich mix of recreational opportunities for our visitors.

Demands for recreational opportunities within the Reserve will undoubtedly increase in the future. Likewise, our constituent base may shift and interests in various forms of recreation may evolve. To effectively address the needs of the whole ecosystem, including the human community, the Reserve will seek to better understand our community's recreational interests. To be effective, the Reserve will require a thorough understanding of how the resources within the Reserve are being utilized and the impact

of those uses. The Reserve must be proactive in seeking to understand new uses as they develop and ensuring that those uses do no harm.

The Reserve has developed facilities that support the application of science and education to the issues threatening the fabric of the ACE Basin ecosystem. The Environmental Learning Center will be a focal point for education, while the McKenzie Field Station will remain the center of research efforts for the Reserve and our partners. These facilities will be managed to best serve the Reserve's mission and goals as outlined in the strategic plan.

To be successful in providing high-quality outdoor experiences to our visitors we will look beyond the borders of the Reserve. Organizations like the Great Swamp project, Fish and Wildlife Service, the Nature Conservancy, Charleston County Parks, SC Parks, Recreation, and Tourism provide opportunities for outdoor recreation related to the ACE Basin that compliment those available through the Reserve. The Reserve must continue to seek innovative partnerships with these and others to address the recreational desires of our constituents without compromising our vision for the ACE Basin.

### *Community Resilience*

Coastal communities are vulnerable to a wide range of coastal hazards including hurricanes, shoreline erosion, flooding, and storm surge. The impact of these hazards is compounded by coastal development as coastal population increases and coastal ecosystems are degraded. A resilient community understands the potential impacts of these hazards and prepares themselves to respond with timely and holistic management strategies. This gives communities the ability to 'bounce back' after hazard events and adapt to future conditions. A weak connection between the people living in these communities and their coastal environment and resources will erode the ability of a local government to build resilience. Declining diversity in the coastal ecosystems and weak governance coordination in the communities will decrease the resiliency of a region.

The Reserve will seek to assist communities in becoming more resistant to the potential hazards by strengthening the understanding and appreciation of the coastal environment, and helping the local governments plan for their response to hazards. The Reserve will play a large role in increasing awareness and understanding of potential hazards, their impacts on the community and ecosystems, and how protection of natural areas helps lower vulnerability to natural hazards. The Reserve will play an important role in making the data on coastal resiliency specific to the ACE Basin, rather than relying on information at a national scale. Science and monitoring data will be used to help build local examples, which are far more effective than case studies from other areas of the nation. The Reserve will seek to lead efforts in assisting local governments in planning for their response to potential hazards by considering institutional capacity, land development patterns and natural resource conservation. Through existing partnerships, the Reserve can provide access to information and tools designed to help communities identify critical linkages and understand how decisions impact their community and environment.



Sustainable, well-prepared communities are more resistant to potential hazards. Communities need to prepare to resist damages from hazards, make informed decisions about where land should be developed to avoid putting people and property at risk, and take action to conserve natural areas so they can continue to protect coastal neighborhoods, regional economy and quality of life. The NERR will help communities accomplish this by providing information and access to technical assistance, helping to translate the science available into local governance, and facilitating coordination between organizations so management can cross boundaries. Through awareness, training and local implementation plans, communities build resiliency from the ‘bottom-up’ rather than waiting for regulation to be passed from the ‘top-down’. This builds both buy-in from the community and capacity at the local government level to respond adaptively to future conditions.

The importance of resilient communities will also increase as the impacts of climate change exacerbate the effects of hazards. The Southeast Natural Resource Leadership Group has recognized the need for natural resource agencies to proactively guide policy, management and socioeconomic decision making in the region regarding climate change. With the SCDNR as the NERR partner agency, the Reserve is situated well in order to collaborate with other regional, state and local organizations in the effort to reduce the overall vulnerability of the economic and ecological system to climate variations. In coordination with regional efforts, the NERR will help communities protect themselves and the important natural areas surrounding them.

### **ACE Basin NERR Strategic Plan**

The goals and objectives outlined in this section will guide and support the Reserve in its efforts over the next five years to improve coastal management, advance estuarine research, and educate current and future generations of coastal stewards. This plan is intended to provide broad guidance to the Reserve; details of implementation may be found in the annual work plan.

#### **Mission**

To sustain the ecological health of estuaries entrusted to our care and provide natural areas for research, education, stewardship and compatible human uses.

#### **Vision**

Our vision for the ACE Basin is a healthy estuary where nature and coastal communities thrive.

Our vision for the ACE Basin NERR program is to be recognized as a leader in maintaining healthy estuaries and enhancing quality-of-life for coastal communities.

### Goals and Objectives

The Reserve staff seeks to achieve our vision for the ACE Basin and the Reserve by pursuing three over-arching goals. A series of objectives and strategies are associated with each goal. Together, the goals and objectives form the framework of our strategic plan (Table 1), which is inextricably tied to the goals of both the SCDNR and the NERRS. To achieve our mission and vision we seek to:

- Reflect Aldo Leopold's land ethic in recognizing that individuals play an important role in protecting and preserving the health of the land;
- Recognize that healthy and diverse estuarine/wildlife populations are essential to maintaining a high quality-of-life for coastal communities;
- Include traditional uses such as hunting, fishing, wildlife observation, wildlife photography, and environmental education/interpretation, when compatible, as legitimate and appropriate uses of ACE Basin NERR resources;
- Forge strong partnerships as tools essential to carrying out our mission;
- Complement and supplement existing management, education, and research programs; and
- Respect local values, private landowner rights, and the opinions of our neighbors.

**Table 1. ACE basin NERR strategic plan including goals, objectives and strategies.**

Goal 1:							
Strengthen the role of the reserve as a leader in ensuring the long term protection of the biological, cultural and historical resources of the ACE Basin NERR							
Objective 1a: Short-term variability and long-term change in physical, biological, and societal components of the ACE Basin NERR are characterized and connections between habitats and land use understood.							
Strategies:							
	• participate fully in the NERR System Wide Monitoring Program (SWMP)						
	• broaden the reserve's research portfolio by encouraging and enabling non-SWMP research activities						
	• conduct a resource inventory of significant features (biological, historical, cultural etc.) for all reserve properties						
	• build a better understanding of land-use in the ACE Basin						
	• assess level and type of human activities on managed lands						
Objective 1b: The estuarine ecosystem is afforded greater protection through development of proactive management strategies and participation in partner-based protection initiatives.							
Strategies:							
	• establish a plan for public access that is consistent with wildlife needs						
	• develop and implement strategies for managing "species of concern"						
	• support land protection initiatives throughout the ACE Basin						
	• respond to "events of concern" (spills, strandings, marsh die-off, etc.) within and adjacent to the reserve						

Goal 2:								
Improve the ability of the ACE Basin community to act as good stewards of the ACE Basin								
Objective 2a: Community information needs regarding stewardship of the ACE Basin are assessed through censuses of program audiences and partners.								
Strategies:								
• engage fully in the ACE Basin NERR Advisory Committee, CTP coordinating committee facilitating exchange of information with community leaders representing all facets of our programs								
• conduct formal surveys of audiences								
Objective 2b: Audiences and partners are equipped with the information necessary to understand, appreciate and advocate for their estuaries.								
Strategies:								
• deliver timely, audience-driven, conservation-oriented information to support the public in protection of their resources (ex. Circle Hooks for Conservation, seminar series, monofilament recycling centers)								
• enhance decision-maker understanding of scientific information and current best management practices by providing access to science-based training and current technology								
• provide education programs to enhance the understanding, appreciation and conservation of estuaries for a broad spectrum of the public								
• encourage and support stewardship ethic by enabling hands-on activities for the general public								
Objective 2c: Common goals of the ACE Basin NERR and reserve partners are advanced through coordinated action.								
Strategies:								
• build relationships that support Reserve programs through participation in initiatives with partners								
• support the NERRS through participation in system-wide efforts								
• promote collaboration between local governments to assist effective land-use planning and solve complex environmental problems								
• encourage public participation in policy decisions through open communication with decision-makers								

Goal 3:							
Enhance the capacity of the reserve to act as an important contributor to the ACE Basin community, DNR and NERRS							
Objective 3a: Staff have a clear understanding of their role within the Reserve and are provided opportunities to develop existing skills and learn appropriate new skills that support their role.							
	Strategies:						
	• staff have opportunities for skill development						
	• Reserve planning clearly communicates staff roles						
Objective 3b: Communication is improved within the Reserve, and between the Reserve and partners.							
	Strategies:						
	• encourage staff interaction among sectors						
	• ensure Reserve is well represented within the Basin by bolstering regions where representation is weak and ensuring that Advisory committee represents all regions						
Objective 3c: Programmatic connections between the ACE Basin NERR and DNR, NOAA\ERD, other reserves, and local partners are reinforced.							
	Strategies:						
	• develop a common understanding of the connection between reserve actions and partners goals						
	• staff actively share their expertise and resources with our partners, particularly our parent organizations						
Objective 3d: High quality facilities, equipment, and services are available for reserve staff and partners.							
	Strategies:						
	• monitor and maintain the condition of reserve facilities and equipment						
	• identify equipment and facility needs, then plan and implement fixes						
	• provide visitors to the Reserve with material and informational support.						

Development of the strategic plan was guided by the principle that all elements of the plan must contribute significantly to the goals of both SCDNR and the NERRS. Development of the plan proceeded from an internal discussion of existing program objectives and Reserve operations; to a thorough examination of the requirements and objectives of our stakeholders and parent agencies; and culminated with the articulation of Reserve activities within a strategic plan that was clearly grounded in the goals of both DNR and NERRS. Table 2 illustrates the connection between each Reserve objective and the goals of both DNR and NERRS.

**Table 2. Summary of the connection between Reserve objectives and goals of key partners.**

<b>Agency</b>	<b>Goal</b>	<b>Reserve Objectives</b>
<b>SCDNR</b>	Enhance the effectiveness of the agency in addressing natural resource issues	1a, 1b
	Improve the general operations of the agency	3b, 3C, 3D
	Create an agency environment that supports a dedicated, professional workforce	3a
	Enhance public trust and confidence in the agency	2a, 2b, 2c
<b>NERRS</b>	Strengthen the protection and management of representative estuarine ecosystems to advance estuarine conservation research and education	1a, 1b, 2c, 3a, 3b
	Increase the use of Reserve science and sites to address priority coastal management issues	3C, 3D
	Enhance people's ability and willingness to make informed decisions and take responsible actions that affect coastal communities and ecosystems	2a, 2b

Staff will use the strategic plan as a tool to help foster better integration of Reserve programs both internally and externally. To accomplish its goals and objectives, the Reserve is divided into various sectors. The previous management plan, as most did, treated sectors as units that functioned independently. In contrast, the new strategic plan

provides a vehicle to illustrate the commonalities in purpose and method shared by the sectors. Table 3 lists the Reserve sectors and shows how each sector is involved in advancing Reserve objectives. Required sector plans in subsequent chapters provide additional detail on how each sector implements strategies to achieve the Reserve objectives.

**Table 3. Summary of the connection between sector activities and overarching goals of the Reserve.**

<b>NERR Sector</b>	<b>Objective Addressed</b>
Administration	1b, 2a, 2c, 3a, 3b, 3c, 3d
Coastal Training Program	1b, 2a, 2b, 2c, 3a, 3b, 3c
Education	2a, 2b, 2c, 3a, 3b, 3c, 3d
Research	1a, 2a, 2c, 3a, 3b, 3c, 3d
Stewardship	1a, 1b, 2a, 2b, 2c, 3a, 3b, 3c, 3d

### **Management Authority and Overview of Reserve**

The ACE Basin NERR program is consistent with the South Carolina Coastal Program, which is authorized through the South Carolina Coastal Management Act of 1977. In summary, the law establishes:

- A South Carolina Coastal Council [restructured in the 1993 Legislature as the Office of Ocean and Coastal Resource Management in the South Carolina Department of Health and Environmental Control (DHEC)].
- The development and administration of a comprehensive Coastal Management Program.
- A permitting process for activities occurring in the four “critical areas” of the coastal zone (tidelands, coastal waters, beaches and primary ocean-front sand dunes).
- A mechanism for State and local agency consistency with the State’s approved Coastal Management Program throughout the coastal zone.

ACE Basin NERR was designated by the South Carolina Council in 1993 as a Geographic Area of Particular Concern (GAPC). This segment of the Coastal Management Program focuses on the following broad categories:

- Areas of unique natural resource value, including those exhibiting scarce or vulnerable natural habitats and physical features; those offering substantial recreational value; and those of vital importance in protecting and maintaining coastal resources.
- Areas where activities, development, or facilities depend on proximity to coastal waters, in terms of use or access.
- Areas of special historical, archeological or cultural significance.

For each of these categories, standards or criteria are defined, priorities of uses within the area are specified, and specific geographic sites or areas within the coastal zone are identified. The authority that assures adequate management of GAPCs is Sections 7(A) and 8(B)(11) of the South Carolina Coastal Management Act. This coordination and certification authority is affirmed by Memoranda of Understanding (MOU) executed between the South Carolina Coastal Council and each of the State agencies with authority over GAPCs.



# **South Carolina Department of Natural Resources**

## **Introduction**

In 1994, portions of four independent state agencies (Wildlife and Marine Resources, Water Resources, Land Resources and Conservation Districts, and the Office of State Geologist from the Budget and Control Board) were merged to better manage South Carolina's natural resources into and beyond the year 2000. The Division of Marine Resources (MRD) within SCDNR is responsible for conservation, protection and wise use of the state's marine resources through efforts in research, management, and public education. The Division also serves as the state's mission-oriented research facility for coastal zone management. As such, MRD provides on-site management of the Reserve and houses staff at the Marine Resources Center located at Ft. Johnson on James Island, just outside of Charleston, S.C.

## **Mission**

Our mission is to serve as the principal advocate for and steward of South Carolina's natural resources.

## **Vision**

**Our vision for South Carolina** is an enhanced quality of life for present and future generations through improved understanding, wise use, and safe enjoyment of healthy, diverse, sustainable and accessible natural resources.

**Our vision for the DNR** is to be a trusted and respected leader in natural resources protection and management, by consistently making wise and balanced decisions for the benefit of the state's natural resources and its people.

## **Core Values**

Our actions will be guided at all times by the following shared internal values:

- Teamwork - We will accomplish our mission and achieve our vision through goal-focused, cooperative efforts that rely on effective internal and external communication and partnering.
- Integrity - We will lead by example, ensuring that our standards are high, and our actions are fair, accountable and above reproach.
- Dedication - We will maintain a steadfast commitment to the state's natural resources and our agency's mission.
- Excellence - We will always do our best, and continuously strive to improve our processes, activities, policies, operations and products.
- Service - We will provide quality service that meets the needs and exceeds the expectations of the public and our own employees.

## **Guiding Principles**

In carrying out our mission, we will continuously strive to:

- Enhance public and private partnerships and open communications necessary to cooperatively protect and manage the state's natural resources;
- Ensure that agency decisions and actions regarding the state's natural resources are based on a balance of scientific knowledge, strong conservation ethics, objectivity, fairness, and the needs and interests of the public;
- Ensure the safety and well-being of the public in their use and enjoyment of the state's natural resources;
- Ensure the continuation and effective management of hunting, fishing, boating, and other natural resources-related activities;
- Evaluate and improve agency functions and procedures to ensure efficiency, effectiveness, and accountability, emphasizing quality service to all customers, internal and external; and
- Foster an organizational culture that emphasizes effective leadership at all levels, a diverse, well-trained, and professional workforce, and an enjoyable and fulfilling work environment.

### **Strategies**

To more effectively accomplish our mission and attain our vision, the DNR will work diligently toward achieving the following overarching goals and objectives during the next five years:

#### **Goal 1. Enhance the effectiveness of the agency in addressing natural resource issues.**

- Broaden strategies to address the impacts of population growth, habitat loss, environmental alterations, overuse and other challenges faced in protecting, enhancing and managing diverse natural resources;
- More effectively develop, coordinate, and integrate resource-specific conservation and management plans, research and policies within the agency; and
- Expand sound application of science for natural resource management and decision-making.

#### **Goal 2. Improve the general operations of the agency.**

- Develop and implement department-wide operational plans that clearly connect all agency activities to specific goals and annual accountability reports;
- Fully develop the agency's regional hub system;
- Continue to develop and maintain modern, well-integrated information systems and technology throughout the agency;
- Enhance and maintain effective communications throughout all levels of the agency;
- Maximize efficiency of internal operations and business procedures; and
- Aggressively pursue increases in revenue, state and federal funding, and identify new funding sources to support accomplishment of our mission.

#### **Goal 3. Create an agency environment that supports a dedicated, professional workforce.**

- Implement comprehensive workforce planning that is consistent with agency priorities;
- Expand consistent, agency-wide employee training, retention, and compensation efforts; and
- Implement initiatives that improve employee morale and teamwork, instill a sense of pride in the agency, and emphasize the importance of its mission.

**Goal 4. Enhance public trust and confidence in the agency.**

- Foster more effective communications, outreach, and partnering with the public and State Legislature;
- Develop strategies that address divergent public opinion and expectations concerning issues related to accessibility, use, and protection of natural resources;
- Optimize our customer service through regular monitoring of constituent needs, public opinion, and agency performance; and
- Enhance natural resource education to provide the public with knowledge necessary in making informed natural resource decisions.

SCDNR has developed the above framework to encourage healthy, sustainable levels of natural resources, satisfied customers, and public confidence. Facing the twenty-first century, South Carolina's natural resources are healthy, abundant, and support multiple uses. Ensuring the continued abundance of these resources requires partnerships among those within the public and private sectors. The ACE Basin National Estuarine Research Reserve program is one such partnership that will enable DNR to maintain our high quality-of-life in the South Carolina Lowcountry.

# National Estuarine Research Reserve System

## **Introduction**

The National Estuarine Reserve System was created by the Coastal Zone Management Act (CZMA) of 1972, as amended, 16 U.S.C. Section 1461, to augment the Federal Coastal Zone Management (CZM) Program. The CZM Program is dedicated to comprehensive, sustainable management of the nation's coasts.

The Reserve system is a network of protected areas established to promote informed management of the Nation's estuaries and coastal habitats. The Reserve system currently consists of 28 Reserves in 22 states and territories, protecting over one million acres of estuarine lands and waters.

## **Mission**

As stated in the NERRS regulations, 15 C.F.R. Part 921.1(a), the National Estuarine Research Reserve System mission is:

*the establishment and management, through Federal-state cooperation, of a national system of Estuarine Research Reserves representative of the various regions and estuarine types in the United States. Estuarine Research Reserves are established to provide opportunities for long-term research, education, and interpretation.*

## **Goals**

Federal regulations, 15 C.F.R. Part 921.1(b), provide five specific goals for the Reserve system:

- (1) Ensure a stable environment for research through long-term protection of National Estuarine Research Reserve resources;
- (2) Address coastal management issues identified as significant through coordinated estuarine research within the System;
- (3) Enhance public awareness and understanding of estuarine areas and provide suitable opportunities for public education and interpretation;
- (4) Promote Federal, state, public and private use of one or more Reserves within the System when such entities conduct estuarine research; and
- (5) Conduct and coordinate estuarine research within the System, gathering and making available information necessary for improved understanding and management of estuarine areas.

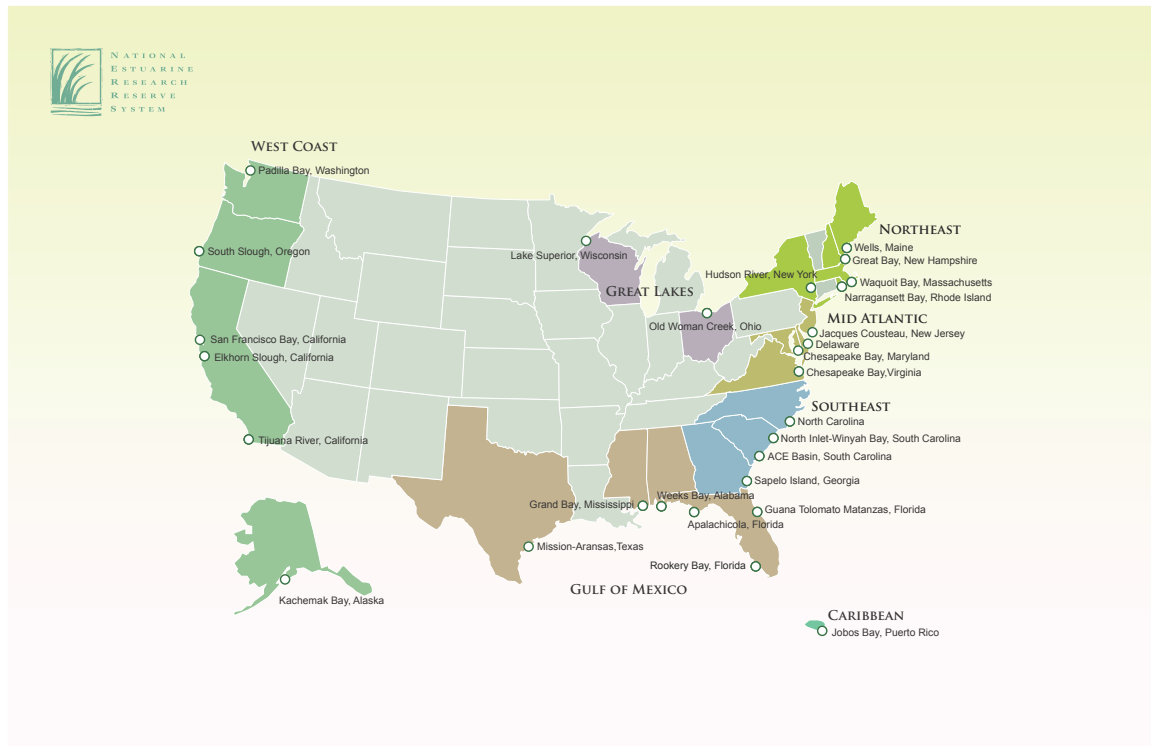
### **Strategic Plan**

The Reserve system began a strategic planning process in 1994 in an effort to help NOAA achieve its environmental stewardship mission to “sustain healthy coasts.” In conjunction with the strategic planning process, ERD and Reserve staff has conducted a multi-year action planning process on an annual basis since 1996. The resulting three-year action plan provides an overall vision and direction for the Reserve system. As part of this process, the Reserve system developed a vision: Healthy estuaries and watersheds where coastal communities and ecosystems thrive; and mission: To practice and promote coastal and estuarine stewardship through innovative research and education, using a system of protected areas. The following goals are outlined in the 2005-2010 Strategic Plan.

1. Strengthen the protection and management of representative estuarine ecosystems to advance estuarine conservation, research and education.
2. Increase the use of Reserve science and sites to address priority coastal management issues.
3. Enhance peoples’ ability and willingness to make informed decisions and take responsible actions that affect coastal communities and ecosystems.

### **Biogeographic Regions**

NOAA has identified eleven distinct biogeographic regions and 29 subregions in the U.S., each of which contains several types of estuarine ecosystems (15 C.F.R. Part 921, Appendix I and II). When complete, the Reserve system will contain examples of estuarine hydrologic and biological types characteristic of each biogeographic region. As of 2010, the Reserve system includes 28 Reserves (Figure 2).



**Figure 2. Location of the 28 National Estuarine Research Reserves.**

### **Reserve Designation and Operation**

Under Federal law (16 U.S.C. Section 1461), a state can nominate an estuarine ecosystem for Research Reserve status so long as the site meets the following conditions:

1. The area is representative of its biogeographic region, is suitable for long-term research and contributes to the biogeographical and typological balance of the System;
2. The law of the coastal State provides long-term protection for the proposed Reserve's resources to ensure a stable environment for research;
3. Designation of the site as a Reserve will serve to enhance public awareness and understanding of estuarine areas, and provide suitable opportunities for public education and interpretation; and
4. The coastal State has complied with the requirements of any regulations issued by the Secretary [of Commerce].

Reserve boundaries must include an adequate portion of the key land and water areas of the natural system to approximate an ecological unit and to ensure effective conservation.

If the proposed site is accepted into the Reserve system, it is eligible for NOAA financial assistance on a cost-share basis with the state. The state exercises administrative and management control, consistent with its obligations to NOAA, as outlined in a memorandum of understanding. A Reserve may apply to NOAA's ERD for funds to help support operations, research, monitoring, education/interpretation, stewardship, development projects, facility construction, and land acquisition.

#### **National Estuarine Research Reserve System Administrative Framework**

The Estuarine Reserves Division of the Office of Ocean and Coastal Resource Management (OCRM) administers the Reserve system. The Division establishes standards for designating and operating Reserves, provides support for Reserve operations and system-wide programming, undertakes projects that benefit the Reserve system, and integrates information from individual Reserves to support decision-making at the national level. As required by Federal regulation, 15 C.F.R. Part 921.40, OCRM periodically evaluates Reserves for compliance with Federal requirements and with the individual Reserve's Federally-approved management plan.

The Estuarine Reserves Division currently provides support for three system-wide programs: the System-Wide Monitoring Program, the Graduate Research Fellowship Program, and the Coastal Training Program. They also provide support for Reserve initiatives on restoration science, invasive species, education, and Reserve specific research, monitoring, education and resource stewardship initiatives and programs.

# Plans and Agreements

## Administration Plan

### Introduction

The administrative framework for the Reserve was developed with recognition of the need for a high level of intra-and inter-agency cooperation and coordination to achieve effective management of the Reserve. This framework is intended to foster cooperation by establishing avenues and regular opportunities for discussion and evaluation of Reserve management programs, issues, and needs, as well as coordinating activities. It also identifies agency and staff responsibilities for Reserve management functions, including: administration, research, monitoring, education and interpretation, stewardship, public use and land acquisition.

The overall operation and management of the Reserve is the responsibility of the Marine Resources Division (MRD), which was designated in 1972 by Governor Robert McNair as the laboratory for coastal zone research in SC. MRD, located in Charleston, is one of the largest and most sophisticated marine and estuarine research and management facilities on the East Coast. The Reserve is located programmatically within the Coastal Reserves and Outreach Office, which contains land management, public affairs and remaining education functions of the Division. Staff of the Marine Resources Research Institute, the research arm of MRD, includes more than 50 marine scientists, biologists, and technicians housed in a 50,000 sf cooperative research facility. Members of the staff hold adjunct or research appointments with state colleges and universities and cooperate in marine science education programs at these institutions.

Administration of the Reserve is a cooperative state/federal partnership between the National Estuarine Research Reserve System and the SCDNR. The Estuarine Reserves Division (ERD) in NOAA administers the NERRS. ERD is responsible for ensuring that the Reserve is managed according to the System's policies and regulations (Title 15 of the Code of Federal Regulations, Part 921), and according to federal grant award conditions, including performance and financial criteria. ERD is also responsible for periodic site visits and evaluations as required by Sections 312 and 315 of the Coastal Zone Management Act of 1972, as amended (CZMA).

### Connection to the Strategic Plan

The Reserve has developed strategic goals and objectives that help to integrate work from the various sectors. The strategies to which Administration contributes most significantly are presented below within the context of the overarching goals and objectives of the Reserve. In addition to participating in these specific strategies, administrative staff plays a key role in implementing all strategies employed by the Reserve by helping to establish priorities, identify and allocate resources, and facilitate communication.



**Table 4. Summary of administration plan strategies.**

Goal 1:							
Strengthen the role of the reserve as a leader in ensuring the long term protection of the biological, cultural and historical resources of the ACE Basin NERR							
Objective 1b: The estuarine ecosystem is afforded greater protection through development of proactive management strategies and participation in partner-based protection initiatives.							
	Strategies:						
	• establish a plan for public access that protects natural resources						
	• support land protection initiatives throughout the ACE Basin						
Goal 2:							
Improve the ability of the ACE Basin community to act as good stewards of the ACE Basin							
Objective 2a: Community information needs regarding stewardship of the ACE Basin are assessed through censuses of program audiences and partners.							
	Strategies:						
	• engage fully in the ACE Basin NERR Advisory Committee, CTP coordinating committee facilitating exchange of information with community leaders representing all facets of our programs						
Objective 2c: Common goals of the ACE Basin NERR and reserve partners are advanced through coordinated action.							
	Strategies:						
	• build relationships that support Reserve programs through participation in initiatives with partners						
	• support the NERRS through participation in system-wide efforts						
	• encourage public participation in policy decisions through open communication with decision-makers						

Goal 3:							
Enhance the capacity of the reserve to act as an important contributor to the ACE Basin community, DNR and NERRS							
Objective 3a: Staff have a clear understanding of their role within the Reserve and are provided opportunities to develop existing skills and learn appropriate new skills that support their role.							
	Strategies:						
	• staff have opportunities for skill development						
	• Reserve planning clearly communicates staff roles						
Objective 3b: Communication is improved within the Reserve, and between the Reserve and partners.							
	Strategies:						
	• encourage staff interaction among sectors						
	• ensure Reserve is well represented within the Basin by bolstering regions where representation is weak and ensuring that Advisory committee represents all regions						
Objective 3c: Programmatic connections between the ACE Basin NERR and DNR, NOAA\ERD, other reserves, and local partners are reinforced.							
	Strategies:						
	• develop a common understanding of the connection between reserve actions and partners goals						
Objective 3d: High quality facilities, equipment, and services are available for reserve staff and partners.							
	Strategies:						
	• identify equipment and facility needs, then plan and implement fixes						

Partners: State and Federal

*South Carolina Department of Natural Resources:*

The Marine Resources Division assumes the lead role in implementing and coordinating programs for research, monitoring, resource protection, and education at the Reserve. However, implementation of the management plan requires a cooperative effort among several divisions within SCDNR. Figure 3 provides an overview of the Department's organizational structure highlighting the Divisions that work most closely with the Reserve.



**Figure 3. SCDNR organizational chart showing Divisions.**

The Wildlife and Freshwater Fisheries Division (WFF) has a long and successful background in land and facilities management. WFF operates and manages the 12,055-acre Bear Island and 9,000-acre Donnelley Wildlife Management Areas and also has a broad spectrum of ongoing management activities within the Reserve and throughout the ACE Basin region. WFF has taken an active part in habitat protection efforts in cooperation with The Nature Conservancy, Ducks Unlimited, U.S. Fish and Wildlife Service and private landowners.

The Heritage Trust Program, which is managed by the WFF, has been directly involved in Reserve land acquisitions, including Ashe, Beet, Big, Warren, Otter, and South Williman islands. This program plays a key state-wide role in management of sensitive, non-game and endangered species and migratory bird resources and is a major partner in implementation of the Reserve management plan.

The Division of Outreach and Support Services is nationally recognized for its highly successful information and education program. The Reserve has built on this experience and expertise in developing an education/interpretive program through coordination with CEC and other education programs within MRD.

Enforcement of regulations pertaining to natural resources within the Reserve comes under jurisdiction of SCDNR's Law Enforcement Division, which has conservation officers stationed in the ACE Basin. Also, Reserve staff may have Deputy Law Enforcement Commissions and coordinate with local officers to supplement enforcement in the Reserve.

The Marine Resources Division is further divided into four offices (Figure 4). The Reserve is located within the Office of Coastal Reserves and Outreach, which also includes all MRD outreach, land management functions. This organizational placement serves the Reserve well by giving direct access to a pool of talented educators, land managers, and the media coordinator.



**Figure 4. Organizational structure of the Marine Resources Division.**

*SC Office of Ocean and Coastal Resource Management (SC-OCRM)*

Although SC-OCRM in the SCDHEC is the designated state agency to administer programs and receive fiscal awards under the federal Coastal Zone Management Act, OCRM chooses not to be involved in direct management of the Reserve. Therefore, OCRM has named the SCDNR as the management agency for the Reserve. A MOU between NOAA and SCDNR formally recognizes SCDNR as the entity responsible for development and implementation of the management plan, day-to-day operation of the Reserve and serves as the fiscal agent in receiving funds from NOAA. OCRM provides surveillance and enforcement to ensure compliance with the Coastal Zone Management Program and the approved management plan. OCRM also serves on the Reserve’s advisory committee and provides input into the research and educational priorities of the Reserve.

*Department of the South Carolina Department of Parks, Recreation and Tourism*

Edisto Beach State Park, owned and operated by the Department of the South Carolina Department of Parks, Recreation and Tourism (SCPRT), is the location for many of the Reserve’s education/interpretive activities. A MOU between SCDNR and SCPRT provides a framework for cooperation to aid, promote and manage interpretive, historical, scientific, educational and recreational activities in the Reserve. Programs within the two agencies are complementary and, through close cooperation in operating the Center, the public’s understanding, appreciation, and stewardship of estuaries, coastal habitats and associated watersheds have strengthened.

The enabling legislation of SCPRT specifies that the Agency “promote the general health and welfare of the people of the State by developing and expanding new and existing recreational areas, including the existing State Park System” (51-1-60; 1967). Edisto Beach State Park is one of the earliest designated parks in the State Park System,

established in 1935. The System has since expanded to include 48 operational parks and offers a wide spectrum of recreational opportunities. Explicit to the State Park Service mission today is the provision of “natural resource-based recreational opportunities with emphasis on conservation, education, and interpretation of natural, cultural and historical resources.”

Interpretation has been an important part of the State Park Service since 1968. More than 500,000 visitors participate in state park educational programs each year. This represents 5% of the total visitation to parks. SCPRT and the Reserve are committed to increasing the percentage of visitors who receive some type of interpretation during their visit to Edisto Beach State Park and the Reserve. The cooperative development of an interpretive learning center is consistent with the Strategic Management Plan (1997), which has been endorsed by the Governor of SC.

#### *U.S. Fish and Wildlife Service*

The Reserve and USFWS are partners through the ACE Basin National Wildlife Refuge (NWR) and the Bay/Estuary Program. The Service is also a member of the ACE Basin Task Force, which provides guidance for the ACE Basin Project. The Refuge currently encompasses approximately 18,000 acres. The refuge complex located in the Edisto River area is also within established boundaries of the Reserve.

The Charleston Ecological Services Office oversees the SC Coastal Ecosystems Project, which provides a valuable bridge between all Service programs and ongoing partnerships among private and public entities working in the ACE Basin.

Both USFWS and NOAA-ERD programs share the common goals of providing federal leadership and support in protecting, restoring, and enhancing coastal and estuarine resources through management, research, monitoring and education. This requires a collaborative process involving all interested parties at the federal, state and local levels, as well as the private sector.

#### *Private Partners*

The Reserve has enjoyed an excellent working relationship with The Nature Conservancy, Ducks Unlimited, the Coastal Conservation League, the Lowcountry Open Land Trust, Beaufort Open Land Trust and the Edisto Island Open Land Trust. These partners have been instrumental in land acquisition negotiations and providing technical, legal and financial support.

The Nature Conservancy (TNC) works in partnership with all of the above groups in the ACE Basin through an innovative concept called “*Biosphere Reserves*.” The concept brings together a broad spectrum of interests and builds upon the idea that business and resource conservation are not separate and incompatible. TNC headquarters are located at The Grove along with ACE Basin NWR personnel and within boundaries of the Reserve. TNC has also named the ACE Basin as one of its “Last Great Places” which

embraces the protection of outstanding ecosystems and has worked very closely with the Reserve over the past decades in habitat protection.

### *Staffing of the Reserve*

An adequate staff is essential to implement the management plan and to achieve the Reserve's research, monitoring, education and resource protection objectives. The Reserve permanent staff currently includes: Reserve Manager, Research Coordinator, Education Coordinator, CTP Coordinator, Stewardship Coordinator, Research Biologist and Reserve Biologist. These employees are in full-time permanent state positions within existing programs of SCDNR. Staff responsibilities and duties include:

#### *Reserve Manager*

The Reserve Manager is located within the Coastal Reserves and Outreach Office of MRD at the Fort Johnson campus in Charleston, SC. An office is also maintained at the Bennett's Point Field Station for the Reserve Manager. Specific duties and responsibilities are:

- Responsible for fulfilling the mission, goals and objectives of the Reserve;
- Seeks and applies for private, state and federal grants for the Reserve;
- Directs the day-to-day operation of the Reserve program under the broad policy direction of the Deputy Director for Marine Resources;
- Programmatic and administrative responsibility for state and federal grants, contracts, and budget appropriations for the Reserve, including applications, determination of expenditures, performance reports and annual reports;
- Directs operation of the McKenzie Field Station and Reserve activities at the Environmental Learning Center;
- Provides oversight of the Reserve's research, monitoring, education, outreach and resource protection programs and coordinates special staff functions to meet goals;
- Serves as liaison to local, state, and federal agencies, advisory councils, and other interested groups to improve cooperation and coordination in management of the Reserve;
- Serves as principal contact and represents Reserve and SCDNR at state, regional, and national NOAA, OCRM, NERRS, and CZM program meetings, conferences and workshops;

- Assumes principal responsibility for preparation of and implementation of the Reserve's federally-approved management plan;
- Receives and evaluates input from the Reserve Advisory Committee and citizen groups;
- Coordinates with SC-OCRM/DHEC and SCDNR comments on all permitting activities affecting the Reserve;
- Works with The Nature Conservancy, Ducks Unlimited, U.S. Fish and Wildlife Service and other members of the ACE Basin Task Force in identifying key lands for acquisition and writes grants, contracts, and agreements for funding said projects;
- Oversees facilities development, site selection and changes in the Reserve boundaries through appropriate chain-of-command; and
- Coordinates special Reserve activities with other divisions within SCDNR.

#### *Research Coordinator*

The Research Coordinator is located within the Marine Resources Research Institute of MRD/SCDNR at the Fort Johnson campus in Charleston, SC. Specific responsibilities include:

- Coordinates research and monitoring activities at the Reserve and develops and maintains working relationships with other research institutions, laboratories, universities and related organizations;
- Facilitates use of the Reserve for research by making information, equipment and resources available for researchers and by coordinating access to research facilities;
- Maintains Reserve scientific equipment and research and monitoring databases;
- Designs, conducts, and/or supervises specific research and monitoring activities specified in the Reserve's research and monitoring plan;
- Works with the Reserve Manager and Education Coordinator in developing and implementing research initiatives which further the goals of the Reserve management plan;
- Develops and disseminates information about the Reserve's research and monitoring activities, opportunities and findings;

- Manages state and federal research and monitoring grants for the Reserve;
- Responsible for training and supervision of research staff, interns and volunteers;
- Represents the Reserve at regional and national NOAA, OCRM, NERRS, and CZM researcher meetings, conferences, and workshops;
- Conducts ecological characterization studies and writes site profiles for the Reserve and ACE Basin Project Area;
- Issues requests for proposals and oversees the peer review process for Reserve funded research and monitoring;
- Develops additional research guidelines as new issues arise and presents them to the research sub-committee for appropriate action; and
- Pursues additional (external) funding sources for research and monitoring in the Reserve.

#### *Education Coordinator*

The Education Coordinator is located at Fort Johnson and works in collaboration with the reserve manager and sector coordinators. Specific duties and responsibilities are:

- Develops, supervises and conducts educational programs of the Reserve, NERRS, and SCDNR for students, teachers, educators, local and regional officials and the general public;
- Develops and disseminates educational materials and resources related to SCDNR and Reserve, including information linking research and education with the coastal-decision making community;
- Participates in development of interpretive exhibits and materials on the Reserve;
- Represents the Reserve and SCDNR at regional and national NOAA, OCRM, NERRS, and CZM educators meetings, conferences, and workshops;
- Works with Reserve Manager, Research Coordinator and CTP Coordinator in developing and implementing educational initiatives which further the goals of the Reserve Management Plan;
- Manages state, federal and private education grants and contracts for the Reserve;



- Works with the Reserve Manager in implementing the Reserve Management Plan;
- Coordinates marine/ estuarine education and outreach efforts in the ACE Basin watershed and nearby communities with SCPRT and the Office of Public Affairs at MRD;
- Issues requests for Reserve funded proposals for education and conducts peer review;
- Serves as liaison with the academic community and is the primary contact for education, interpretation and visitor use programs in the Reserve;
- Provides training and supervision of volunteers who assist in education programs and evaluates their performance; and
- Maintains Reserve education equipment.

#### *Stewardship Coordinator*

Stewardship Coordinator is a full-time permanent employee assigned to coordinate activities of the stewardship sector and oversee operation of the McKenzie Field Station. The Stewardship Coordinator is stationed at the McKenzie Field station to provide better representation for the Reserve within the ACE Basin community. Specific duties and responsibilities are:

- Works with community leaders to conduct periodic formal census of general audience needs;
- Develops programs to expose community leaders and general audiences to the resources of the ACE Basin and activities of staff;
- Facilitate access to Reserve facilities and lands for partners engaged in common pursuits;
- Provide opportunities for involvement of other sectors in activities of the stewardship program;
- Acts as the Reserve's liaison to partners and stakeholders in the ACE Basin;
- Maintains licenses necessary to support Stewardship activities of the Reserve;
- Supports land stewardship through participation in programs of the Reserve and partners; and

- Coordinates with key partners to support efforts relating to animal health.

#### *Coastal Training Program Coordinator*

The CTP Coordinator is stationed at Fort Johnson and works in collaboration with the reserve manager and sector coordinators. Specific duties and responsibilities are:

- Conducts census of audience needs;
- Seeks to enhance decision-maker understanding of scientific information and current best management practices by providing access to science-based training and access to current technology and participation in hands-on activities;
- Strengthens relationships with partners through participation in initiatives of common concern and actively seeks relationships with new partners to advance common goals;
- Promotes collaboration between local governments and effective land-use planning;
- Seeks training, formal or informal, that expands capabilities appropriate to the position;
- Encourages integration of reserve programs through involvement of other sectors in activities of the CTP program beginning at the planning level;
- Ensures that CTP programs reinforce as appropriate the core concepts found within research, stewardship and education programs; and
- Collects data and prepares reports to satisfy NERRS reporting requirements.

#### *Reserve Biologist*

Due to the remote location of McKenzie Field Station, a full-time permanent employee has been assigned to coordinate logistics and field operations for researchers and provide support for Reserve programs throughout the ACE Basin. Specific duties and responsibilities are:

- Serve as on-site assistant to the Reserve Manager and Stewardship Coordinator;
- Manages day-to-day onsite operation of the McKenzie Field Station;

- Responsible for coordinating field support, equipment and accommodations needed for researchers in their respective components of the Reserve;
- Provide field support for research and monitoring in the Reserve;
- Provide field support for special educational and outreach activities;
- Coordinates the use of boats and vessels at the field station;
- Perform special biological surveys and duties related to habitat protection, fisheries management, wildlife inventory, and monitoring;
- Conduct regular patrol and surveillance of Reserve lands for enforcement purposes and maintains requirements for Deputy Law Enforcement Commission, as directed;
- Maintain close contact with fisheries community and related regional interests to ascertain problem areas and issues;
- Inspect and maintain all field equipment at the field station to ensure that each piece of equipment is in “operational readiness” condition; and
- Maintain boundary signs, kiosks, and other interpretive enforcement tools at key locations in the Reserve.

#### *Research Biologist*

The Research Biologist is stationed at Fort Johnson but travels regularly to the ACE Basin and other locations within the ACE Basin to conduct research and support the research efforts of partners. Specific duties and responsibilities are:

- Responsible for day-to-day operations of the research sector;
- Provides support for researchers working in the Reserve;
- Ensures compliance with NERRS research protocols;
- Responsible for collection and storage of Reserve research data;
- Assists with preparation of reports on NERRS data, as requested by the Research Coordinator and Reserve Manager; and
- Leads habitat mapping efforts for the Reserve.

#### 2. Additional Staff Needs:

The plan provides for assisting staff with everyday tasks that fall outside the scope of their professional responsibilities (i.e., clerical, reception of visitors, non-technical fieldwork, and routine maintenance of facilities). Staffing needs are increasing with maturity of the Reserve and as facilities are being developed at Bennett's Point and Edisto Beach State Park. Therefore, it is desirable and appropriate to hire additional staff when funds are available and/or reassign current personnel to make better and more efficient use of time and skills of permanent staff. Staffing needs are as follows:

- **Administrative Assistant:** A permanent full time administrative assistant would support general operations of the Reserve by coordinating aspects of permitting, purchasing, grant management, human resources, reporting, and information management.
- **Education Specialist:** This position would provide support for outreach and education activities of the Reserve; develop education materials that further the goals of the Reserve management plan; prepare and deliver presentations to various groups, agencies, and professional organizations; assists sector coordinators with seminars, workshops, and symposia designed to transfer information to estuarine and coastal managers.
- **Reserve Volunteer Coordinator:** A permanent full time volunteer coordinator would leverage significant additional support by recruiting and training volunteers, scheduling and coordinating their activities; planning, designing and maintaining seasonal interpretive information for Reserve bulletin boards; assisting staff with public programming, tours, workshops, and visitor center operations including the coordination of custodial tasks and housekeeping in Reserve facilities.

#### ACE Basin NERR Advisory Committee

To provide for effective coordination and cooperation among all interests involved with the Reserve, an ACE Basin Advisory Committee was established following designation in 1992. The Committee meets at least twice annually and the Deputy Director for Marine Resources of DNR chairs the Committee. The Reserve Manager serves as staff to the Committee. The Chairperson, as needed, appoints sub-Committees for research and education. The Committee may consist of the following representative groups:

- Marine Education
- Scientific Community
- Local Landowners
- Local Government
- Environmental Interest
- Commercial Fishing

- Recreational Fishing
- Timber Industry
- Private Non-Profit Conservation
- State-Federal Agencies Active in ACE Basin
- Business Community

Duties and responsibilities of the Advisory Committee are:

- Advise SCDNR and the Reserve Manager on matters of policy relating to planning for and operation of the NERR;
- Provide guidance for establishing priorities for research and education efforts in the Reserve and review information materials generated by Reserve staff;
- Review, monitor and advise on specific program activities to be conducted in the Reserve to ensure that they are consistent with goals and objectives set forth in the management plan;
- Advise on implementation of acquisition and boundary expansion strategies;
- Review and advise on facilities development to ensure consistency with the management plan; and
- Represent the interests of users of the Reserve and its neighbors.

### **Research Plan**

The Reserve System provides a mechanism for addressing scientific and technical aspects of coastal management problems through a comprehensive, interdisciplinary, and coordinated approach. Research and monitoring programs form the foundation of this approach. Reserve research and monitoring activities are guided by the Reserve System research and monitoring plan 2006-2011 which identifies goals, priorities, and implementation strategies. Research efforts in combination with the education and outreach programs, will help ensure the availability of scientific information that has long-term, system-wide consistency. Guidance provided from outreach and education sectors will help ensure collection and translation of data most relevant to the needs of audiences served by the Reserve. Research within the Reserve is designed to fulfill the Reserve system goals as defined in program regulations. These include:

- Address coastal management issues identified as significant through coordinated estuarine research within the System;
- Promote Federal, state, public and private use of one or more Reserves within the System when such entities conduct estuarine research; and
- Conduct and coordinate estuarine research within the System, gathering and making available information necessary for improved understanding and management of estuarine areas.

### **Connection to the Strategic Plan**

The Reserve, because of its relatively low level of development, has retained many of the attributes associated with undisturbed estuaries. As a result, the ACE Basin provides a benchmark to compare against coastal areas where significant human disturbances are occurring. The core area is well protected and serves as an undisturbed baseline monitoring area while the buffer zone is large and diverse enough to support a wider range of research activities. Understanding human impact on coastal resources is the necessary first step to prescribing sound stewardship actions.

The Reserve has a prominent role in protecting the resources found within the ACE Basin NERR (Reserve Goal #1) through the activities of the Research Sector. The Research sector leads activities that advance understanding of the short-term variability and long-term change in coastal ecosystems by conducting and enabling research, particularly within the ACE Basin watershed. Much of the Reserve's work occurs under the System-wide Monitoring Program. Additional sampling has occurred, and will almost certainly occur in the future, through partnerships with staff of the Marine Resources Research Institute, the research arm of the Marine Division of the South Carolina Department of Natural Resources. Finally, the Reserve facilitates research on priority topics by providing access to facilities and managed properties to cooperating investigators.

It is particularly important to effectively communicate results of research to those responsible for resource management and coastal zone planning at individual, local, state, and federal levels.

To improve the ability of a wide range of audiences and partners to act as good stewards of the ACE Basin (Reserve Goal #2), the research staff will work with the Stewardship, Education and Coastal Training Program sectors to translate research results into outreach products. Staff of the Research sector may also participate directly in interactions with audiences as needed and appropriate.

Finally, like all other sectors, the Research sector will actively participate in enhancing the capacity of the Reserve to achieve its goals (Reserve Goal #3) by identifying ways that the Reserve may invest in the development of staff, improve the quality and efficiency of Reserve assets and processes, and strengthen the support of the Reserve by partners.

**Table 5. Summary of Research Sector strategies.**

Goal 1:							
Strengthen the role of the reserve as a leader in ensuring the long term protection of the biological, cultural and historical resources of the ACE Basin NERR							
Objective 1a: Short-term variability and long-term change in physical, biological, and societal components of the ACE Basin NERR are characterized and connections between habitats and land use understood.							
	Strategies:						
	• participate fully in the NERR System Wide Monitoring Program (SWMP)						
	• broaden the reserve's research portfolio by encouraging and enabling non-SWMP research activities						
	• build a better understanding of land-use in the ACE Basin						

Goal 2:							
Improve the ability of the ACE Basin community to act as good stewards of the ACE Basin							
Objective 2a: Community information needs regarding stewardship of the ACE Basin are assessed through censuses of program audiences and partners.							
	Strategies:						
	<ul style="list-style-type: none"><li>engage fully in the ACE Basin NERR Advisory Committee, CTP coordinating committee facilitating exchange of information with community leaders representing all facets of our programs</li></ul>						
Objective 2c: Common goals of the ACE Basin NERR and reserve partners are advanced through coordinated action.							
	Strategies:						
	<ul style="list-style-type: none"><li>build relationships that support Reserve programs through participation in initiatives with partners</li></ul>						
	<ul style="list-style-type: none"><li>support the NERRS through participation in system-wide efforts</li></ul>						

Goal 3:							
Enhance the capacity of the reserve to act as an important contributor to the ACE Basin community, DNR and NERRS							
Objective 3a: Staff have a clear understanding of their role within the Reserve and are provided opportunities to develop existing skills and learn appropriate new skills that support their role.							
Strategies:							
		● staff have opportunities for skill development					
Objective 3b: Communication is improved within the Reserve, and between the Reserve and partners.							
Strategies:							
		● encourage staff interaction among sectors					
Objective 3c: Programmatic connections between the ACE Basin NERR and DNR, NOAA\ERD, other reserves, and local partners are reinforced.							
Strategies:							
		● staff actively share their expertise and resources with our partners, particularly our parent organizations					
Objective 3d: High quality facilities, equipment, and services are available for reserve staff and partners.							
Strategies:							
		● identify equipment and facility needs, then plan and implement fixes					



### Research Priorities

The reserve system provides a mechanism for addressing the needs for basic research of estuarine systems and for scientific and technical aspects of coastal management problems through a comprehensive, interdisciplinary, and coordinated approach. Research and monitoring programs form the foundation of this approach. Federal regulations, 15 C.F.R. Part 921.50 (a), specify the purposes for which research funds are to be used to:

- Support management-related research that will enhance scientific understanding of the Reserve ecosystem,
- Provide information needed by Reserve managers and coastal ecosystem policy-makers, and
- Improve public awareness and understanding of estuarine ecosystems and estuarine management issues.

In addition, the ACE Basin Reserve has identified the following four priority topics on which research will be focused as funding becomes available:

#### 1. Habitat and Ecosystem Coastal Processes

- Survey of tidal freshwater faunal communities in the Combahee and S. Edisto Rivers
- Monitoring sediment-erosion rates in the salt marsh
- Surveys of plants and animal populations on marsh hammocks
- Effect of climatological cycles and storm events on estuarine water quality
- Development of critical habitat GIS database for improved management of species of concern
- Improved understanding of water body dynamics and flows throughout the ACE Basin

#### 2. Anthropogenic Influences on Estuaries

- Sources of elevated levels of contaminants in sediments along the Atlantic Intracoastal Waterway (AIWW)
- Causes of water quality degradation in northern portion of ACE Basin Reserve
- Assessment of impact of tidal restriction at Edisto Causeway on hydrologic conditions in Scott Creek
- Impact of waterfowl impoundments management protocols on water quality in ACE Basin waterways.

#### 3. Species Management

- Develop Best Management Practices for managing feral and invasive species
- Improving water quality in the ACE Basin through oyster restoration and community education
- Monitoring of species of significant interest, including wood storks, bald eagles, migratory waterfowl, threatened and endangered species

#### 4. Social Science and Economics

- Adaptive management of human-environment interactions on Botany Bay plantation
- Effects of commercial harvest on mudminnows (*Fundulus heteroclitus*) in tidal creeks in South Carolina and the potential for aquaculture to reduce harvest
- Evaluate impacts of rhesus monkeys on water quality and island vegetation composition

The ACE Basin NERR research program supports the Reserve system research goals. The Reserve system research goals are embedded in Goal 2 of the Reserve System Strategic Plan 2005-2010, 'Increase the use of Reserve science and sites to address priority coastal management issues,' and are outlined in the 2006-2011 Reserve System Research and Monitoring Plan. They include:

- Biological, chemical, physical, and ecological conditions of Reserves are characterized and monitored to describe reference conditions and to quantify change.
- Scientists conduct research at Reserves that is relevant to coastal management needs and increases basic understanding of estuarine processes.
- Scientists have access to NERRS datasets, science products, and results
- The scientific, coastal management, and education communities, as well as the general public, use data, products tools, and techniques generated at the NERRS.

Currently, there are two Reserve system-wide efforts to fund estuarine research. The Graduate Research Fellowship Program (GRF) supports students to produce high quality research in the Reserves. The fellowship provides graduate students with funding for 1-3 years to conduct their research, as well as an opportunity to assist with the research and monitoring program at a Reserve. Projects must address coastal management issues identified as having regional or national significance; relate them to the Reserve system research focus areas; and be conducted at least partially within one or more designated Reserve sites. Proposals must focus on the following areas: 1) Eutrophication, effects of non-point source pollution and/or nutrient dynamics; 2) Habitat conservation and/or restoration; 3) Biodiversity and/or the effects of invasive species; 4) Mechanisms for sustaining resources within estuarine ecosystems; or 5) Economic, sociological, and/or anthropological research applicable to estuarine ecosystem management.

Students work with the research coordinator or manager at the host Reserve to develop a plan to participate in the Reserve's research and/or monitoring program. Students are asked to provide up to 15 hours per week of research and/or monitoring assistance to the Reserve; this training may take place throughout the school year or may be concentrated during a specific season.

In addition, research may be funded through the NERRS Science Collaborative (NSC), which is a NERRS program that focuses on integrating science into the management of coastal natural resources. Currently administered through the University of New Hampshire, the program integrates and applies the principles of collaborative research, information and technology transfer, graduate education, and adaptive management with the goal of developing and applying science-based tools to detect, prevent, and reverse

the impacts of coastal pollution and habitat degradation in a time of climate change. The program is designed to enhance the NERRS ability to support decisions related to coastal resources through collaborative approaches that engages the people who produce science and technology with those who need it. In so doing, the NSC seeks to make the process of linking science to coastal management decisions, practices, and policies more efficient, timely, and effective.

### Monitoring Program

It is the policy of the Reserve to implement each phase of the Phased Monitoring Plan initiated by ERD in 1989, and referenced in the Reserve system regulations and strategic plan:

- Phase I: Environmental Characterization, including studies necessary for inventory and comprehensive site descriptions;
- Phase II: Site Profile, to include a synthesis of data and information; and
- Phase III: Implementation of the System-wide Monitoring Program.

The first two phases of the Plan have been completed. Update of the Site Profile and ACE Basin Characterization will be performed, as needed, according to a schedule established by the NERRS.

The System-Wide Monitoring Program prescribes a framework for collection of estuarine data in a standardized manner. Data from the program may be used to examine environmental trends ranging in scope from national long-term changes to local short-term variability. As a result, SWMP data may be applied to coastal management issues of national, regional or local concern. The principal focus of the monitoring program is to develop quantitative measurements of short-term variability and long-term change in the integrity and diversity of representative estuarine ecosystems and coastal watersheds for the purposes of contributing to effective coastal zone management. The program is designed to enhance the value of the Reserves as a system of national references sites. The program also takes a phased approach in focusing on three different ecosystem characteristics.

1. **Abiotic Variables:** The monitoring program currently measures continuous pH, conductivity, salinity, temperature, dissolved oxygen, turbidity, water level and monthly nutrient and chlorophyll  $\alpha$  samples at four data logger stations and monthly diel nutrient and chlorophyll  $\alpha$  samples at two SWMP stations. In addition, the program collects continuous meteorological data at the Reserve's field station. Each Reserve uses a set of automated instruments and weather stations to collect these data for submission to a centralized data management office.
2. **Biotic Variables:** The Reserve system is focusing on monitoring biodiversity, habitat and population characteristics by monitoring organisms and habitats as funds are available.

3. Watershed and Land use Classifications: This component attempts to identify changes in coastal ecological conditions with the goal of tracking and evaluating changes in coastal habitats and watershed land use/cover. The main objective of this element is to examine the links between watershed land use activities and coastal habitat quality.

Data collected through the SWMP are compiled electronically at the Centralized Data Management Office (CDMO) at the Belle W. Baruch Institute for Marine Biology and Coastal Research of the University of South Carolina. They provide additional quality control for data and metadata and compile and disseminate the data and summary statistics via the Web (<http://cdmo.baruch.sc.edu>) where researchers, coastal managers and educators readily access the information. The metadata meet the standards of the Federal Geographical Data Committee.

#### Partnerships and Collaborations

Research within the ACE Basin Reserve is accomplished through a variety of partnerships and collaborations. The following examples of past and current research illustrate the range of these projects:

Clemson University - Development of aquaculture, particularly in the Edisto buffer area; Waterfowl and wetlands research; Dynamics of species invasion using the titan acorn barnacle the striped barnacle.

University of South Carolina - Interdisciplinary studies of estuarine productivity and fluxes; Archaeological surveys to locate, identify and catalogue resources of historical or cultural importance.

SC Department of Natural Resources - Fishery populations assessments and habitat studies; Marsh ecology investigations; Water quality, including pollution studies; Fishery restoration activities; Estimates of recreational and commercial use of living marine resources; Diseases of important recreational and commercial fishery species; Effects of habitat alteration, e.g., renourishment of beaches, dredging, impounding, marina location, etc.; Use by endangered and threatened species, e.g. eagles, woodstorks, sea turtles and shortnose sturgeon; Impoundment studies (management effects on water quality, species composition and community structure); Habitat manipulation and resource management studies; Impacts of fish harvesting gear on the physical environment and on non-target species.

The Citadel - Shorebird and wading bird ecological studies; Ecological studies of estuarine macrophytes; Snail – *Spartina* interactions in multiple South Carolina marsh systems.

University of Georgia – Influence of predators on oyster community structure and resultant ecosystem functioning at a biogeographic scale

University of Florida – Adaptive management of human-environment interactions in SC’s ACE Basin

University of Houston – Arthropod communities in coastal salt marshes

University of Delft, The Netherlands – Modeling saltwater intrusion in the Edisto Basin

Research opportunities at the Reserve are available to any qualified scientist, academician, or student affiliated with any university, college, school, non-profit research institution, private profit organization, or state, local, or federal government agency. Unaffiliated individuals who have demonstrated the ability to conduct research relevant to the Reserves needs may also qualify.

All researchers are encouraged to obtain a research permit from the Reserve, and coordinate projects with the Research Coordinator and other staff, as appropriate. This process provides access to proposed research work plans allowing staff to effectively coordinate activities within the Reserve. Research in the core area is limited to activities that do not manipulate habitats. Manipulative research may be permitted in the buffer zone if it addresses identified research or management needs. Approved projects may only result in minor impacts to Reserve resources that will return to a natural state without assistance in a reasonable time period.

The ACE Basin NERR Research Coordinator is responsible for coordinating research and monitoring activities in the Reserve and acts as the primary contact for researchers working in the Reserve. Researchers are encouraged to present project findings at the appropriate time in the format agreed upon by the Research Coordinator and researcher. These presentations provide information for improved understanding and management of coastal resources. Peer-reviewed publications are encouraged, as are presentations at symposia, conferences and meetings. Researchers are encouraged to present findings of their work to local or regional audiences utilizing Reserve programs such as the Coastal Exploration Series whenever practical. Researchers are encouraged to provide to the Research Coordinator copies of reports and publications derived from research conducted within the Reserve.

While the Reserve preferentially supports research within Reserve boundaries, we recognize that such boundaries are artificial and do not encompass the full range of habitats comprising the ACE Basin watershed. Therefore, research may be supported outside established boundaries when work is applicable to Reserve issues.

#### Monitoring and Evaluation

The foremost research priority of the ACE Basin Reserve is the efficient operation of the System-Wide Monitoring Program (SWMP). The evaluation of this program is stringent and continuous. The national SWMP Oversight Committee (OC) has established Standard Operating Procedures designed to uphold the quality of the data collected, and maximize the amount of data collected. If the Reserve does not meet these requirements

it could face sanctions from ERD. A Reserve's compliance status is based on a rolling three year point system for each of the categories of SWMP (Water Quality, Nutrients and Meteorological). A total of 5 points in a single category over a rolling 3 year period will be considered non-compliant, and invoke mandatory OC involvement and possibly other actions.

All qualified researchers, as described above, are welcome to use the ACE Basin NERR Bennett's Point field station and facilities, however preference is given to those whose projects complement the Reserve's research priorities, also described above. Since the field station is managed by the Stewardship Coordinator, the Research Coordinator recommends that particular research partners, collaborators, or graduate students be permitted to utilize the field station facilities. The Research Coordinator may also recommend potential GRF candidates for funding when their proposed research qualifies under Reserve system research focus areas and contributes to the ACE Basin NERR research priorities outlined above.

## **Education and Interpretation Plan**

### **Connection to the Strategic Plan**

The NERRS was created in 1972, as part of the CZMA, to increase our ability to responsibly manage estuarine ecosystems. A critical aspect of this mandate for the NERRS is the education, interpretation and outreach component. In part, a Reserve must “...serve to enhance public awareness and understanding of estuarine areas, and provide suitable opportunities for public education and interpretation” (CZMA 315 (b) (2) (c)). Within the NERRS, each Reserve is responsible for developing and implementing a program that links education to scientific research and stewardship. Each Reserve’s education program functions independently, but share common themes with other education programs in the NERRS.

The Education Program seeks to deliver programs that lead South Carolina’s citizens to understand, appreciate, and value our coastal ecosystems while advancing the goals of the broader education system. The ACE Basin NERR has developed a strategic plan that integrates this work with that of the various sectors. It is noteworthy that staff from the stewardship sector plays a significant role in outreach to groups beyond the traditional scope of education programs such as fishers, recreational boaters, and homeowners. As a result, the strategies that the Education sector employs are presented within the context of the overarching goals and objectives of the Reserve. Specific strategies pursued by Education are summarized in Table 6.

**Table 6. Summary of education program strategies.**

Goal 2:								
Improve the ability of the ACE Basin community to act as good stewards of the ACE Basin								
Objective 2a: Community information needs regarding stewardship of the ACE Basin are assessed through censuses of program audiences and partners.								
Strategies:								
• engage fully in the ACE Basin NERR Advisory Committee, CTP coordinating committee facilitating exchange of information with community leaders representing all facets of our programs								
• conduct formal surveys of audiences								
Objective 2b: Audiences and partners are equipped with the information necessary to understand, appreciate and advocate for their estuaries.								
Strategies:								
• deliver timely, audience-driven, conservation-oriented information to support the public in protection of their resources (ex. Circle Hooks for Conservation, seminar series, monofilament recycling centers)								
• provide education programs to enhance the understanding, appreciation and conservation of estuaries for a broad spectrum of the public								
• encourage and support stewardship ethic by enabling hands-on activities for the general public								
Objective 2c: Common goals of the ACE Basin NERR and reserve partners are advanced through coordinated action.								
Strategies:								
• build relationships that support Reserve programs through participation in initiatives with partners								
• support the NERRS through participation in system-wide efforts								
• promote collaboration between local governments to assist effective land-use planning and solve complex environmental problems								



Goal 3:							
Enhance the capacity of the reserve to act as an important contributor to the ACE Basin community, DNR and NERRS							
Objective 3a: Staff have a clear understanding of their role within the Reserve and are provided opportunities to develop existing skills and learn appropriate new skills that support their role.							
	Strategies:						
	• staff have opportunities for skill development						
	• Reserve planning clearly communicates staff roles						
Objective 3b: Communication is improved within the Reserve, and between the Reserve and partners.							
	Strategies:						
	• encourage staff interaction among sectors						
Objective 3c: Programmatic connections between the ACE Basin NERR and DNR, NOAA\ERD, other reserves, and local partners are reinforced.							
	Strategies:						
	• staff actively share their expertise and resources with our partners, particularly our parent organizations						
Objective 3d: High quality facilities, equipment, and services are available for reserve staff and partners.							
	Strategies:						
	• monitor and maintain the condition of reserve facilities and equipment						
	• provide visitors to the Reserve with material and informational support.						

### Priority Topics

ACE Basin NERR educational goals and objectives will be accomplished using a variety of informational, interpretive and educational programs and media (Reserve goal #2). Specific programs may include, but are not limited to:

- Research /management-oriented interpretive tours of ACE Basin NERR (by land and water) for the public and special groups;
- Estuarine ecology workshops for educators and students; workshop topics will be directly related to the Reserve and coastal management;
- The Coastal Carolina Discovery program, which provides lessons focusing on estuarine ecology for middle school students;
- Interpretive programs offered in cooperation with SCPRT staff at the Environmental Learning Center;
- The Coastal Exploration Series provides lectures and hands-on experiences for the general public; it highlights the value of land

conservation and expertise of local and regional resource managers, especially Reserve staff;

- Audio-visual presentations, research demonstrations, and facility tours will be made available to interested groups upon request

Publications will conform to applicable federal and state design guidelines and may include, but are not limited to:

- Reserve brochures containing orientation and interpretive information;
- Interpretive materials such as fact sheets, plant and animal checklists, trail guides, etc.;
- Newsletters (ACE Basin Current Events);
- Research abstracts, technical reports and publications;
- Curriculum materials, educator's resource materials, citizens stewardship materials;
- Need assessments and other technical document aimed at improving programs
- Public relations materials, feature articles, local television and radio spots;
- Educational posters.

The following themes, established by the Estuarine Research Federation as priority concepts to guide estuarine education, will be used in the ACE Basin NERR education program where practical and appropriate:

- Understanding the fragility of estuaries and other wetlands and the time frame within which they can be impacted and restored;
- Understanding the intrinsic connections between estuarine resources and oceans, lakes, rivers, tributaries and uplands;
- Understanding the economics of estuaries and other wetlands and their value in support of recreation, tourism, transportation and commerce;
- Understanding the variety of natural communities within estuaries;
- Understanding the importance of estuarine resources as habitat for species adapted to estuarine conditions;
- Understanding the importance of estuarine resources as spawning and nursery grounds for sport species and commercially important fish taken in ACE Basin; and, the sensitivity of these functions to pollution and system alteration;
- Understanding the two main sources of food in the estuary (phytoplankton and detritus), the food web, the importance of marshes and submerged vegetation, and food habits of key species;
- Understanding the consequences of development both in the watershed and adjacent to the estuary by knowing that such activities generally increase loading of nutrients, toxic substances, sediments, and other substances and how this affects estuarine life;
- Understanding the geologic origins and evolution of estuaries and other wetlands;

- Understanding the relationships between physical, chemical and biological components of estuaries and the spatial and temporal changes in these components;
- Understanding the hydrodynamics of estuaries and wetlands, the roles of freshwater inflows, ion exchange, tides (lunar and wind-driven), and water circulation and mixing;
- Understanding the mass balance of materials in estuaries and other wetlands by accounting for the external and internal sources of organic and inorganic material, particularly nutrients and toxic substances; the tendency of estuaries to keep such materials within the system; and the movement of these materials among the living and non-living components of the system; and
- Understanding estuarine management by knowing the roles of federal, state, and local regulatory and planning agencies, advocacy groups, and educational institutions, and how they work to manage and protect estuarine resources

### Priority Audiences

ACE Basin NERR offers coastal residents and visitors unparalleled opportunities to learn about estuarine resources and their values. The Reserve's education programs address reserve goal #2 directly by providing the information and tools needed for audiences to be strong stewards of our coastal natural resources. Programs include interpretive field trips and guided activities for the general public, expert lectures, education programs for middle and high school students, and educator workshops. These activities are supplemented by interpretive materials, informational publications, and public access to trails and observation platforms, which all support self-guided learning.

The "Coastal Carolina Discovery" program is available to organized school groups for exploration of the ACE Basin estuaries. This program includes a two-hour cruise aboard the *E/V Discovery* providing students and teachers an opportunity learn first-hand about our estuaries and see marine biologists at work with various sampling techniques. Approximately 600 students and teachers participate in this program annually. This program is unique in that participants get up close and personal with marine/estuarine organisms. During the program students learn about life history of species, relationships among biotic and abiotic components of the ecosystem, the role humans play in determining the fate of estuaries and the importance of estuaries to our quality-of-life.

The Environmental Learning Center at Edisto Beach State Park (formerly the Environmental Learning Center) helps promote the wise use of coastal resources and the goals of the ACE Basin NERR. The Center features interactive displays, a touch tank, a classroom/laboratory, a conference room, and outdoor nature trails, all of which help visitors understand the fragile resources of the Reserve and the role they can play in stewardship of those resources. Curriculum based programs for students are conducted at the facility and at the nearby Edisto Beach State Park, and an average of 1,900 students take advantage of these programs annually. In addition to school groups, the Center also hosts approximately 11,000 visitors annually.

### Partnerships and Collaboration

Reserve education programs will be coordinated with existing programs within SCDNR, OCRM/SCDHEC, the SC Aquarium, Sea Grant, and others that have existing programs. Reserve staff will work with these groups in a supporting role and not duplicate the overall education effort in coastal SC. A special effort will be made to coordinate educational efforts with those of North Inlet/Winyah Bay and Sapelo Island NERRs.

Information about the education program is regularly supplied to NERRS in the forms of educational products (brochures, posters, newsletters), performance reports, and annual reports. The Reserve manager maintains regular contact with NERRS staff and keeps them abreast of educational activities. Collaboration will be fostered through participation in system-wide education projects and professional educator training opportunities. Reserve education staff will be encouraged to communicate and interact frequently with other NERRS staff throughout the U.S. and with the NERRS Program Office in Silver Spring, MD.

In accordance with Reserve goal #3, efforts will be made to continue coordination with other agencies, groups, and organizations involved in ACE Basin educational activities. Active groups include the Harry Hampton Memorial Wildlife Foundation, TNC, DU, USFWS, SC Sea Grant, Walterboro/Colleton Chamber of Commerce, Edisto Island Chamber of Commerce, Edisto/ACE Friends Group, USC Salkahatchie, Colleton County School System, Donnelley Foundation, Nemours Wildlife Foundation, USC/Baurch Marine Lab, Coastal Conservation League, Lowcountry Open Land Trust, Edisto Open Land Trust, Beaufort Open Land Trust and others.

The Reserve will continue to pursue funding from outside the NERRS to sustain and improve our programming. The ACE Basin NERR has successfully applied for and received financial support from a number of funding sources, including ERD/NOAA, USFWS, NOAA CSC, Harry Hampton Memorial Wildlife Foundation, the Donnelley Foundation, SCDNR, SCPRT, TNC, SC Sea Grant, and SCOCRM to assist with the development and implementation of its comprehensive education and interpretation program.

Finally, like all other sectors, the Education Sector will actively participate in enhancing the capacity of the Reserve to achieve its goals (Reserve Goal #3) by identifying way that the Reserve may invest in the development of staff, improve the quality and efficiency of Reserve assets and processes, and strengthen the support of the Reserve by partners.

### Monitoring and Evaluation

The following general operating principles will guide ACE Basin NERR educational and interpretive efforts:

- The Education Coordinator (EC) shall oversee the operation and direction of the education program in cooperation with the SCDNR Office of Coastal Reserves and Outreach and Information and interpretive staff of SCPRT.

Input will be solicited specifically from the MRD Education Officer and Edisto State Park Interpreter;

- On-site educational activities shall stay within public access areas and not in any way interfere with research projects or sensitive habitats;
- Off-site programs will be provided to requesting groups primarily, but not exclusively, in conjunction with public schools and special events sponsored by SCDNR, SCPRT, TNC and ACE Basin Task Force;
- Programs will incorporate current estuarine research results and scientific information;
- Programs will provide the public with accurate and timely information about the ACE Basin NERR, its ecological, economic, cultural and historical values and the issues related to its protection and management;
- Programs will be developed and conducted by the Reserve in cooperation with school systems, professional, civic and environmental organizations, colleges, universities, other institutions and agencies; and
- Programs will be developed cooperatively with local user groups and organizations to ensure community relevance and needs; active involvement from local people will be encouraged.

#### Evaluation

The education programs of the ACE Basin National Estuarine Research Reserve are routinely evaluated to ensure program effectiveness; to ensure that staff continue to meet project goals and objectives; and to determine content comprehension by students and teachers. Education staff may utilize the computer-generated Classroom Performance System (e-instruction) as a reliable assessment tool. A pre-test utilizing “e-instruction” is given to program participants prior to program initiation to gauge their prior knowledge of the topics to be discussed, and a post-test is given following the lesson to determine the participants’ comprehension and retention of the topics covered.

Following each education program, teachers/group leaders are asked to fill out a formal evaluation survey. This survey asks a variety of questions of the participants, including their satisfaction of the program, quality of the program and its contents, and ease of scheduling. Results of these surveys are entered into a database and reviewed by education staff in an effort to continually improve our education programs.

## **Coastal Training Program Plan**

### **Connection to the Strategic Plan**

The Coastal Training Program (CTP) seeks to understand audience needs related to priority issues and deliver the information necessary for effective action and advocacy among coastal decision-makers. The ACE Basin NERR has developed a strategic plan that integrates this work with that of the other sectors. As a result, the strategies that CTP addresses are presented within the context of the overarching goals and objectives of the Reserve. Specific strategies pursued by CTP are summarized in

**Table 7.**

**Table 7. Summary of CTP program strategies.**

Goal 1:							
Strengthen the role of the reserve as a leader in ensuring the long term protection of the biological, cultural and historical resources of the ACE Basin NERR							
Objective 1b: The estuarine ecosystem is afforded greater protection through development of proactive management strategies and participation in partner-based protection initiatives.							
Strategies:							
• support land protection initiatives throughout the ACE Basin							

Goal 2:								
Improve the ability of the ACE Basin community to act as good stewards of the ACE Basin								
Objective 2a: Community information needs regarding stewardship of the ACE Basin are assessed through censuses of program audiences and partners.								
	Strategies:							
	<ul style="list-style-type: none"><li>• engage fully in the ACE Basin NERR Advisory Committee, CTP coordinating committee facilitating exchange of information with community leaders representing all facets of our programs</li></ul>							
	<ul style="list-style-type: none"><li>• conduct formal surveys of audiences</li></ul>							
Objective 2b: Audiences and partners are equipped with the information necessary to understand, appreciate and advocate for their estuaries.								
	Strategies:							
	<ul style="list-style-type: none"><li>• deliver timely, audience-driven, conservation-oriented information to support the public in protection of their resources (ex. Circle Hooks for Conservation, seminar series, monofilament recycling centers)</li></ul>							
	<ul style="list-style-type: none"><li>• enhance decision-maker understanding of scientific information and current best management practices by providing access to science-based training and current technology</li></ul>							
	<ul style="list-style-type: none"><li>• provide education programs to enhance the understanding, appreciation and conservation of estuaries for a broad spectrum of the public</li></ul>							
	<ul style="list-style-type: none"><li>• encourage and support stewardship ethic by enabling hands-on activities for the general public</li></ul>							
Objective 2c: Common goals of the ACE Basin NERR and reserve partners are advanced through coordinated action.								
	Strategies:							
	<ul style="list-style-type: none"><li>• build relationships that support Reserve programs through participation in initiatives with partners</li></ul>							
	<ul style="list-style-type: none"><li>• support the NERRS through participation in system-wide efforts</li></ul>							
	<ul style="list-style-type: none"><li>• promote collaboration between local governments to assist effective land-use planning and solve complex environmental problems</li></ul>							
	<ul style="list-style-type: none"><li>• encourage public participation in policy decisions through open communication with decision-makers</li></ul>							

Goal 3:							
Enhance the capacity of the reserve to act as an important contributor to the ACE Basin community, DNR and NERRS							
Objective 3a: Staff have a clear understanding of their role within the Reserve and are provided opportunities to develop existing skills and learn appropriate new skills that support their role.							
	Strategies:						
	• staff have opportunities for skill development						
	• Reserve planning clearly communicates staff roles						
Objective 3b: Communication is improved within the Reserve, and between the Reserve and partners.							
	Strategies:						
	• encourage staff interaction among sectors						
Objective 3c: Programmatic connections between the ACE Basin NERR and DNR, NOAA\ERD, other reserves, and local partners are reinforced.							
	Strategies:						
	• develop a common understanding of the connection between reserve actions and partners goals						
	• staff actively share their expertise and resources with our partners, particularly our parent organizations						

### Priority Topics

Effective and efficient delivery of information relies on a thorough understanding of audience needs. Audience needs will continue to be assessed by CTP through various methods including direct interaction with the audience, surveys associated with training, and formal assessments such as the *2006 Needs Assessment of Professional Decision Makers in Coastal South Carolina*.

In the 2006 Needs Assessment decision-makers were asked to rank 44 discrete coastal issues classified into five large categories. Based on responses of participants from Colleton, Beaufort and Jasper counties, issues related to Coastal Growth Management were of greatest interest. However, across counties officials scored Community planning and zoning, Low Impact Development, Infrastructure planning, and land use mapping/GIS ranked highest. Within the Beach and Marsh Shoreline Management category the topics of Storms/other coastal hazards and alternatives to Bulkheads/marsh shoreline stabilization scored highest. Under the Pollution Management category wastewater and storm-water ranked higher than more systemic issues like marine debris and nutrients. While both topics in the Water Resources category (Saltwater intrusion and Water supply) were ranked high, when asked to write in three priority topics, this category was rarely chosen. The topics within the Natural Resource/Habitat Issues



category scored highest were Fisheries, Habitat restoration, Visitor-use impacts, and Riparian buffers. These topics will be discussed further with focal audience groups to develop training events. Moreover, as training is developed it will be evaluated for congruence with the Reserve's four high-priority issues.

### Priority Audiences

The CTP training will be delivered to four focal groups from three distinct communities in the ACE Basin. The priority audience will vary among the groups, but will focus on elected and appointed municipal and county officials, municipal and county planners, and rural community organizations and leaders.

The first focal group is the Edisto Beach/Edisto Island community, which is made up of local government officials and active community members. The CTP has been facilitating the efforts of a local conservation-minded called the Edisto Island Preservation Alliance (EIPA) as a major component of Reserve Goal #1. As an umbrella organization composed of local government council and planning commission members, community associations, non-profit organizations and community members EIPA provides an effective vehicle for communication with a broad spectrum of the local community. To date, CTP has provided general technical assistance, and facilitated access to county planning staff and state and federal resources, as needed. More traditional training events may also be held if requested or needed, and would likely include topics from the Beach and Marsh Shoreline Management category of the 2006 Needs Assessment, specifically Beach renourishment, Storms and other coastal hazards, Marina impacts, and Bulkheads/marsh shoreline stabilization alternatives.

The second focal group is the small, rural and traditionally non-technical municipalities spread throughout Colleton County and the ACE Basin watershed. These communities are more difficult to engage because they are spread across a wide geographic region and lack any centralized organization. The town of Walterboro will be the main focus area for this group because it is the county seat. Technical assistance has been offered in the past to answer specific questions from the Colleton County Council and Town of Walterboro staff. The CTP will continue contact with key persons in this area to offer support and assistance. In addition, ideas for training events will be offered to, and solicited from, this focal group. Based on responses from the 2006 Needs Assessment officials in Colleton County are most interested in training on Coastal Growth Management, while staff is more interested in Natural Resources/Habitat Issues. Nearly all topics were scored high, so the exact training topics will be determined through contact with the county/municipal officials and staff.

The third focal group is located within Beaufort and Jasper Counties on the southern end of the ACE Basin, which has recently experienced rapid population growth and land development. This area, though not entirely within the Reserve boundary, impacts the resources within the ACE Basin. Based on results from the 2006 Needs Assessment county/municipal staff are most interested in Coastal Growth Management. Presently, CTP has been coordinating a long-term project addressing the need for a GIS tool to prioritize habitat conservation as coastal growth pressures increase. We envision this

project continuing through large scale seminars on coastal development and Low Impact Development (LID), as well as smaller scale demonstration projects around Best Management Practices for storm water. Water Resource Management issues of Saltwater intrusion and Water supply issues was scored high only in this focal group. The stewardship and CTP will continue to coordinate closely with the key audiences to provide training on these and other topics.

The final focal group, which was not included in the 2006 Needs Assessment, will be added as a priority training group based on the need to increase process skill abilities among those involved in training decision makers and in an effort to actively address Reserve Goal #3. This focal group will also include resource managers involved in collecting the science-based information necessary for efficient land-use planning and natural resource conservation in the ACE Basin. Topics included in previous trainings include Project Design and Evaluation, as well as, Public Issues and Conflict Management. Based on six-month evaluations, attendees are using the skills they have learned at the training and are interested in future events. Additional process skill training for this group will be determined through interaction with staff and discussion with NOAA-CSC trainers on topics most effective as follow-up trainings.

#### *Partnerships and Collaboration*

The Reserve's CTP has been effective in large part due to investments made in strengthening partnerships. The Market Analysis will continue to guide development of partnerships toward those organizations able to help enhance the quality of training offered to coastal decision-makers. For all events, CTP seeks partners from local and county governments, academic institutions, non-profit organizations, private entities, and state and federal agencies. Partners may vary with topic, but the foundation for each partnership remains the same: common interest and ability contribute to the product. This has proven to be an effective formula for providing high-quality training. Current partnerships include SeaGrant Consortium, Clemson University Extension Program, South Carolina Department of Health and Environmental Control Environmental Quality Control Office of Ocean and Coastal Resource Management, and local universities. The ACE Basin CTP has a close working relationship with NOAA's Coastal Service Center, assisting with the development of new training modules and hosting existing training seminars for CTP audience members. The CTP also partners closely with the North Inlet-Winyah Bay (NI-WB) NERR on state-wide efforts. To help ensure that the Reserves in South Carolina continue their strong record of fruitful collaboration the Reserve will continue to be an active participant in the ACE Basin/North-Inlet Bay NERR CTP Advisory Committee. Presently all participating agencies are part of the South Carolina Coastal Information Network, a partnership aimed improving the efficiency and effectiveness of training offered in the coastal region.

In addition to promoting partnerships outside the Reserve, integration with stewardship, education and research activities within the Reserve is a commitment of the CTP. In pursuing the strategies of Reserve Goal #3 CTP will enhance integration of Reserve programs by continuing to:

- work with the stewardship sector to provide training events involving both decision makers and the public to promote communication and understanding
- work with the research sector to provide GIS support necessary for ongoing land protection initiatives within communities
- use NERR research where appropriate in CTP events
- work with the education sector to provide assistance with initiatives such as E-live and the KEEP needs assessment

### Monitoring and Evaluation

Performance measures and program evaluation are important to tracking success and planning for the future. Strategies under Reserve Goal 2 highlight the need for assessments of programs, audiences, and partners. A formal needs assessment was conducted in 2006 to reassess the training and information needs and training delivery preferences of municipal and county officials. For each sector respondents self-assessed their level of knowledge higher than the median score for their self-assessed knowledge levels on 44 discreet coastal issues. This disparity suggests that decision makers may over-estimate their own knowledge about coastal environmental issues, which makes it important to continue informal information gathering on appropriate topics and information gaps. This will be addressed through contact with the audience and evaluation of events. In the future it will be determined whether additional evaluation of and specific audience is warranted.

Training and technical assistance will be monitored and evaluated through the performance measures developed by the CTP community. Evaluations will be conducted to determine overall satisfaction and effectiveness of training. Follow-up evaluations may also be conducted on selected training events to evaluate the long-term impact of training. Participants in technical assistance projects may also be surveyed to determine long-term effectiveness of training. All results will be reported in accordance with the CTP performance monitoring procedures.

### ACE Basin/North Inlet-Winyah Bay NERR CTP Advisory Committee

#### *Roles and Responsibilities*

The joint ACE Basin/ North Inlet-Winyah Bay CTP Coordinating Committee was originated to ensure that both NERRs CTP training programs benefit the people and natural resources of the ACE Basin and North Inlet-Winyah Bay reserves over the long-term. Members of the Coordinating Committee will make recommendations, as necessary to assist the respective CTP coordinators, on the future direction of the training efforts both in issues content and training techniques to best equip coastal decision-makers. The Committee will make suggestions for improvements in the direction and progress of the CTP programs. The committee will review the results of Market Analyses, Needs Assessments, training plans, strategies, target audiences, issues and results of evaluations as information becomes upgraded, which will make the CTP efforts a dynamic and evolving program.

Individual members of the CTP Coordinating Committee represent important partner agencies and organizations and will ensure continued collaborative support of CTP efforts. Other important agency representatives and CTP partner groups may be added as the CTP program matures. Most of the Committee members are agency representatives on numerous State-wide committees and, thereby, can exchange information about the CTP with other potential partners, as well as, municipal officials and other community leaders.

#### *Organizational and Operational Structure*

The CTP Coordinating Committee will meet at least twice a year to discuss progress and direction of the program. A staff member from one of the South Carolina NERR will serve as Chair of the Committee on a one-year rotational basis, at least for the first two years of the program implementation phase. It will be the responsibility of the Chair to coordinate meeting times, set agendas and provide minutes of the meetings. The reserves are also responsible for keeping the Committee informed of CTP progress made during the year. Decisions will be made by consensus of committee members, or by majority vote, if consensus is not reached. In addition to the CTP Coordinating Committee, each reserve may elect to form a local-based CTP advisory committee to assist with site-based planning, support, and implementation of the program.

#### *Members*

Phil Maier; Manager, ACE Basin NERR, SC Dept. Natural Resources

Wendy Allen; Manager, North Inlet - Winyah Bay NERR

Steve Gilbert; NOAA - Coastal Services Center

Rick DeVoe; Director, South Carolina SeaGrant Consortium

Elizabeth VonKolnitz; SCDHEC- Office of Ocean and Coastal Resource Management

## **Land Acquisition and Boundary Protection Plan**

### **Introduction**

In 2002, the Estuarine Reserve Division of NOAA initiated a system-wide program for acquisition of land within the NERRS. Two important documents were produced, “A National Strategy for NERRS Land Acquisition” and “A Land Acquisition Inventory of the NERRS.” These documents provide flexible and efficient framework for accomplishing land protection objectives of the NERRS. There is interest at all 28 Reserves in land protection and most have indicated land acquisition needs. This chapter presents a plan for setting priorities and identifying criteria for land protection within ACE Basin NERR boundaries. It also describes an amendment to the existing boundaries.

Key land and water areas comprising the ACE Basin NERR represent the most tangible and enduring aspects of the Reserve program. Permanently preserved, minimally disturbed examples of estuarine habitats are crucial to long-term land conservation. Thus, a well-conceived boundary and land acquisition plan is essential to ensuring long-term stability of the natural systems found within the ACE Basin NERR.

Unlike many coastal areas where the ownership pattern is diverse and highly fragmented, ACE Basin has a relatively small number of owners with large undeveloped land holdings. About 75 landowners own 75 percent of the land east of Highway 17 in the ACE Basin. Most of this land is held as private plantations along the Ashepoo, Combahee and Edisto Rivers. Historically, these landowners have practiced good stewardship and maintained a strong conservation ethic in management of these properties. Many of these properties are permanently protected through conservation easements.

### **Partnerships in Land Protection (1988-2008)**

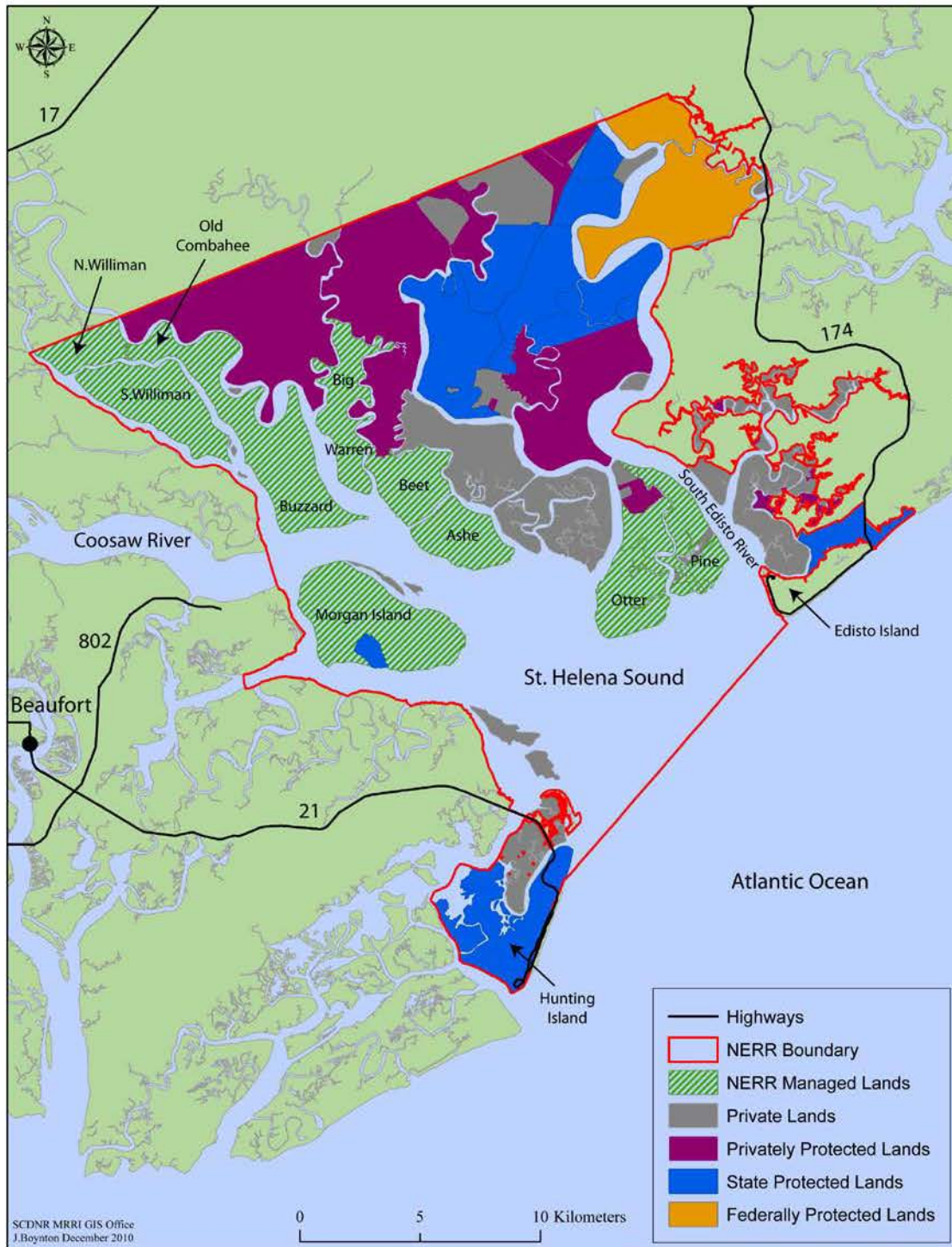
Recognizing the need to protect the exceptional natural resources of the ACE Basin, federal, state and private conservation interests met in 1988 to develop a unified approach to habitat protection and enhancement in the region. This unprecedented conservation initiative was coordinated by the ACE Basin Task Force, which consisted of representatives from the USFWS, SCDNR, DU, TNC, and private landowners. The effort was spurred by the need to respond to the North American Waterfowl Management Plan (NAWMP), which created regional Joint Ventures made up of government agencies, private conservation groups and individuals whose mutual purpose was to restore migratory bird populations to levels of the 1970's and to protect 6 million acres of priority wetlands throughout North America. Protection of the ACE Basin became a flagship project of the Atlantic Coast Joint Venture and a significant component of the NAWMP. The ACE Basin Task Force identified a series of principles that would guide conservation efforts in the ACE Basin. The principles are:

- Maintain the natural character of the Basin by promoting wise resource management on private lands and protection of strategic tracts by public conservation agencies;
- Continue traditional uses such as hunting, commercial and recreational fishing, forest management, and farming;
- Acquire land or easements only from willing sellers and participants. No condemnation procedures will be undertaken;
- Provide assistance in wildlife management to improve habitat; and
- Maintain or improve public access.

As a keystone member of the ACE Basin Project the Reserve has benefited significantly through application of these principles. For more than 20 years these simple ideas have provided the framework for land protection in ACE Basin NERR. The project enjoys broad-based public support, including the endorsement of over 70 citizen groups within the first year. Supporting traditional land uses such as agriculture, timber production, hunting and fishing, has encouraged stability of the area's natural character while simultaneously discouraging industrial and resort development typical of much of the State's coastal zone in the past 30 years. Through land purchases from willing sellers, and through conservation easements granted to conservation organizations by private landowners, the Reserve has helped protect over 20,000 acres. Success of the ACE Basin NERR initiative rests primarily on the willingness of current landowners to protect the larger ACE Basin area. Private ownership that protects and enhances habitat is fundamental to the Reserve concept.

#### *ACE Basin NERR Boundaries*

The boundary for ACE Basin NERR must include "an adequate portion of the land and water areas of the natural system to approximate an ecological unit and to insure effective conservation" (15 C.F.R., Part 921.11). These areas must be discreet enough to be effectively managed, but large enough to accommodate long-term research and monitoring. To help focus management efforts, ACE Basin NERR boundaries encompass two zones: key land and water areas (core area) and a buffer zone. The boundary includes significant lands protected by state, federal, and private entities (Figure 5).



**Figure 5. Protected lands within the ACE Basin NERR boundary.**

The core area of ACE Basin NERR consists of a series of remote coastal islands in southeastern Colleton and Beaufort counties (Figure 6), which are accessible only by water. These are Ashe, Beet, Big, Warren, South Williman, Buzzard, and Old Combahee Islands. The total core area encompasses 14,064 acres of highland and marsh.





**Figure 6. Core area of the ACE Basin NERR.**

In most cases the islands comprising the core of the Reserve consist of a complex including 1-2 significant pieces of upland interspersed with several marsh islands



consisting of low Pleistocene beach ridge remnants surrounded by estuarine tidal marshes. The Ashepoo River bounds the core area to the east and north. Although Ashe Island faces south on St. Helena Sound, it does not have exposed beaches as do Otter and Pine Islands. Rock Creek separates Hutchinson Island (not in the core area) from the Ashe-Beet-Warren-Big island complex that lies in the central portion of the Reserve. The Combahee River separates the Buzzard-Williman island complex from the islands to the east. Morgan Island is delineated as the westernmost part of the Reserve by Coosaw River and is not in the core area, but rather the buffer zone. Uplands associated with Morgan Island are not in the Reserve.

Excavated portions of the Atlantic Intracoastal Waterway (AIWW) bisect Hutchinson Island and separate the marshes of Ashe Island to the south and Beet Island to the north. Beet Island is bounded to the west by the New Chehaw River and Rock Creek to the north and east. Warren and Big Island form the westernmost boundary of the core area. They are both located between the New and Old Chehaw rivers, Big to the north and Warren to the south.

Previously the acreage of the buffer was calculated as the difference between the area of the core and the total area encompassed by the boundary, though it was clearly established that private lands within the boundary were not considered part of the Reserve. As a result, the size of the buffer was overestimated in the previous management plan. Improvements in mapping technology and better access to parcel-level data now allow the land included in the Reserve to be more accurately mapped. The buffer is now calculated as approximately 80,557 acres. Generally, the buffer zone includes the NERR managed lands outside the core area and all state- owned lands, open waters and wetlands, extending up to and including the critical area as defined in the South Carolina Coastal Management Act (Act 123 of the 1977 South Carolina General Assembly). It excludes privately owned uplands and wetlands, and the uplands associated with Morgan Island.

The seaward boundary of the buffer zone is marked by an artificial line, the “**COLREGS**” line, lying between the headlands of Edisto Beach and Hunting Island. The northeastern boundary includes the marshes of South Edisto River draining the western side of Edisto Island and the following tidal stream systems: Big Bay Creek, St. Pierre Creek (Fishing, Store and Bailey Creeks), North Creek and the portion of the Atlantic Intracoastal Waterway (AIWW) connecting the Dawhoo River to the South Edisto. All of Jehossee Island and further north along the South Edisto to the abandoned Seaboard Coastline Railroad (SCR) bed forms the northeast corner.

The abandoned Sea Coast Railroad, running approximately in a southwestern direction, is a persistent dominant feature, and serves as the northern boundary up to the crossing at Winbee Creek on the eastern Chisolm Island shoreline. The zone includes the entire width of the Combahee River floodplain, with Wimbee Creek as the westernmost boundary. Downstream of the former railroad alignment, the western boundary follows Wimbee Creek (including the Williman Islands) into Bull River and across the lower Coosaw River into Morgan River.

The boundary then follows Morgan River out into St. Helena Sound across the mouth of Jenkins, Village and Coffin Creeks, and then southeastward along the shore of St. Helena Island to Harbor River. The boundary crosses Harbor River at the U.S. Highway 21 Bridge to Harbor Island, including all of the marshes but excluding the upland now held in private ownership. The boundary then continues southeast across Johnson Creek, again following U.S. Highway 21, and onto Hunting Island. There, the entire area of marsh and upland owned by the state of South Carolina and managed by SCPRT is included. The southern terminus of the COLREGS line ends at Hunting Island, thus closing the boundary of the buffer zone. At the easternmost point of the buffer zone, on Edisto Island, the marsh and upland similarly owned by the state and managed by SCPRT as Edisto Beach State Park is also included as are all wetlands and critical areas up to Highway 174.

The boundary was drawn in a manner that would ensure: (1) sufficient size to accommodate continuation of research on natural processes, traditional uses and provide additional protection to estuarine-dependent species; (2) the long-term viability of the Reserve for research on natural processes; (3) adequate accommodation of facilities required for research and interpretation and, if necessary, to handle a shift of the Reserve core area as a result of biological, ecological or geomorphic changes; and (4) significant representation of one of the largest undeveloped complexes of wetlands and upland habitat on the Atlantic Coast and national recognition as a unique natural resource area.

Bear Island, a 12,055 acre Wildlife Management Area managed by SCDNR, is an important component of the buffer zone. It plays a vital role in the overall function of the Reserve. Other State-owned lands within the buffer zone include the Edisto Beach State Park and Hunting Island State Park, both managed by the SCPRT.

As new data are acquired on the Reserve, a better understanding will be gained on the role and characteristics of buffer areas and the relationship between sensitive estuarine resources and upstream habitats. Such information may indicate a need to change ACE Basin NERR boundaries, either to include new land areas or remove areas currently within the boundaries. In any event, opportunities for public comment will be provided when changes are proposed.

The Reserve has identified a targeted watershed boundary that represents a critical zone located outside the Reserve boundary in which activities will most directly impact the Reserve. This new targeted watershed boundary will help better focus land protection activities. The target watershed boundary may be viewed at <http://coastalmanagement.noaa.gov/land/targetedpdfs/acebasintwb.pdf>

## Boundary Amendment

### *Introduction*

Consideration is given to expanding boundaries of the Reserve in a non-contiguous fashion to include Botany Bay Plantation. Botany Bay Plantation parcel would become part of the buffer area of the Reserve. The present boundary, established in the FMP/EIS (NOAA 1992), encompasses Edisto Beach State Park and adjacent state-owned properties, but does not extend beyond Highway 174 (the main access route to Edisto).

The 4,687 acre Botany Bay Plantation (32.54N, 80.25W) is adjacent to the waters of the Atlantic Ocean in the northeastern corner of Edisto Island in lower Charleston County, South Carolina. The area lies near the North Edisto River just south of the intensely developed resort islands of Kiawah and Seabrook and just north of the rapidly developing Edisto Beach area.

The area's location near the North Edisto River places it within the boundary of the ACE Basin Focus Area, one of the largest remaining relatively undeveloped wetlands ecosystems along the Atlantic Coast. Botany Bay Plantation WMA/HP with Botany Bay Island (under conservation easement with The Nature Conservancy), and Deveaux Banks, (a South Carolina Heritage Preserve) form a core area of protected habitat in the southeastern corner of the Focus Area.

The biological features of Botany Bay Plantation WMA/HP are characteristic of Sea Islands along the lower Southeast Coast (Sandifer, et al. 1980). The undeveloped coastal habitats of the plantation are important to numerous wildlife species. The beach is utilized for nesting by the Federally threatened loggerhead sea turtle and the state threatened least tern. The maritime forest and coastal scrub/shrub areas provide nesting and foraging habitat for Neotropical songbirds including painted buntings and summer tanagers. The uplands support a wide diversity of game and nongame wildlife. The tidal marshes and managed wetlands support a variety of fish and shellfish resources and provide foraging habitat for numerous wildlife species.

The cultural resources on Botany Bay Plantation WMA/HP are significant. Cultural resource sites dating from as early as the Late Archaic Period through the 19th century are present. Several sites including the Fig Island Shell Rings, outbuildings from Bleak Hall, and elements of the Alexander Bache U.S. Coast Survey Line are listed on the National Register of Historic Places.

The importance of this addition is threefold:

- a. ACE Basin NERR continues to make a significant investment in the Environmental Learning Center; having portions of the island complex as a part of the Reserve would complement this effort by providing high quality outdoor venue for education and research;

- b. The State already owns this property and manages it through the SCDNR, so there would be no cost associated with adding this 4687 acre parcel to the Reserve; and
- c. ACE Basin watershed project boundaries extend northeastward to the North Edisto River.

#### *Advantages of Boundary Expansion*

- The Reserve would gain a high quality site for research and education.
- Expanding the present boundary to include Botany Bay Plantation would provide better protection for the watershed, which extends to the North Edisto River.
- The property would benefit from long-term protection associated with placement within the ACE Basin NERR boundaries.
- Rich in historic and natural resources, the property is a perfect site for education and interpretation, research and stewardship projects.
- Unlike the other NERR managed properties, it is accessible from land providing greater opportunities for offering programs.

#### *Concerns over Boundary Expansion*

In the past, the public has expressed concerns over incorporation of areas into the Reserve. Those concerns were identified through surveys conducted by the ACE Basin NERR Advisory Committee in 1998 (Michael D. McKenzie, Pers. Com.) and are summarized below. Expansion in a non-contiguous manner to include only property that is owned and managed by the State should substantially mitigate concerns related to private properties.

- Once an area is incorporated into ACE Basin NERR boundaries, it becomes a “Geographic Area of Particular Concern” and proposed projects are subjected to more scrutiny by permitting agencies.
- Increased traffic flow may occur where NERR facilities are constructed.
- This appears to be a “Federal Land Grab” and landowners are sensitive to rules and regulations that might infringe on private property rights.
- Boundary expansion would create more land to manage when state and federal budgets are declining.

#### *Direction of Boundary Expansion*

Under this revised management plan the ACE Basin NERR boundary will be modified in a non-contiguous fashion to include Botany Bay Plantation (Figure 7) within the buffer zone. Incorporation of this property in the Reserve will increase the Reserve size by approximately 4687 acres, adding outstanding new examples of maritime communities. Traditional agricultural, forestry, hunting and fishing activities will continue on the property under this amendment. A separate management plan for Botany Bay Plantation is on file and provides guidance for SCDNR management.



**Figure 7. Depiction of Botany Bay Plantation parcel located on the northeast end of Edisto Island.**

### Boundary Protection

The ACE Basin NERR will continue to protect and manage boundaries according to SCDNR laws (SC Code of Laws, Title 50) and NOAA's guidelines for establishing boundaries for NERRS (15 C.F.R. Part 921); and to the extent feasible, acquire properties that will provide further protection of the ACE Basin estuarine ecosystem and enhance opportunities for research and education. Specific activities may include:

- Clearly and conspicuously identify all boundaries, delineate public access points, and protect against illegal activities;

- Acquire and protect key land and water areas and adjacent buffer areas through conservation easements, bargain sales, land trusts, fee simple acquisition, management agreements, and donation or gift; and
- Monitor public use impacts at existing access points and throughout the Reserve, especially in regards to vegetative changes, erosion, water quality, sensitive plant and animal populations, and impacts on research projects.

### Criteria for Land Acquisition

The Reserve Manager will be responsible for deciding whether or not a proposed tract is suitable for acquisition. Once the tract has been accepted for consideration, the project will be ranked using numeric criteria and additional considerations that reflect requirements of the NERRS and DNR. To be considered for acceptance, the project must significantly satisfy the following criteria:

- Provides direct and significant long-term benefits to coastal waters, wetlands, hydrology, and fish and wildlife;
- Meets a need of NERRS; and
- Yields public benefits that are pertinent to an identified need and commensurate with the costs.

Land nominated for acquisition under the NERRS Program will be evaluated, in part, using the following criteria. For a parcel to be considered for acquisition, it must receive a threshold score of 80 points out of the total of 115 points. An evaluator will assign a numerical score for each criterion based on their knowledge and expertise.

A property that does not meet the threshold score, but meets one or more of the guidelines under the “Special Considerations” criterion may be considered for acquisition. Projects that are determined to merit further review will be presented to the SCDNR Habitat Protection Committee for consideration prior to DNR Board review.

<b>CRITERIA</b>	<b>POINTS</b>
1. Fish and Wildlife Habitat	20
2. Threatened and Endangered Species	20
3. Public Recreation Potential	15
4. Manageability	15
5. Riparian and Hydrologic Values	15

6. Forest Sustainability	15
7. Archaeological, Cultural and Historic Values	5
8. Geologic Features	5
9. Conversion Threat	5
	TOTAL
	115
10. Special Considerations (if any)	

### **Description of Evaluation Criteria**

**1. Fish and Wildlife Habitat Values:** The habitat potential of a parcel for all types of wildlife and fisheries species including those hunted and fished.

- Parcel contains excellent habitat or habitat potential for game species.
- Parcel contains excellent habitat for grassland bird species.
- Parcel contains excellent habitat or habitat potential for game fish including cold-water trout, black bass, sunfish and others.
- Parcel contains significant populations of resident species.
- Parcel contains good or excellent habitat or habitat potential for birds.
- Parcel contains good or excellent habitat or habitat potential for significant populations of mammals, reptiles, amphibians and invertebrates.
- Parcel contains areas for resting and feeding of migratory species.
- Parcel exhibits connective habitats, corridors, habitat linkages and areas that reduce biological isolation.
- Parcel borders other protected lands

**2. Threatened and Endangered Species:** The parcel contains populations or suitable habitats of rare, threatened or endangered species of fish, wildlife or plants.

- Parcel contains known occurrences of rare, threatened or endangered species of animals or plants or will serve as a buffer for such a property.
- Parcel is within close proximity to a site with known occurrences of species of concern.
- Parcel contains habitats that are suitable for reoccupation of such species.
- Parcel contains habitats that often harbor such species.
- Parcel is contiguous to Heritage Trust or other protected properties with similar habitat

**3. Public Recreation Potential:** The parcel either possesses or has the potential to support the recreational uses identified in the SCDNR Recreational Use Policy.

- Parcel is externally accessible to the public by automobile or boat and internally accessible by reasonable means that are compatible with the SCDNR Recreational Use Policy.
- Parcel has potential water-based recreational value.
- Parcel has unique habitat, geological formation, wildlife population or other special recreational attraction.
- Parcel has potential for inclusion in the Wildlife Management Area Program.

**4. Manageability:** The potential ability to manage the area in a cost effective and efficient manner.

- Parcel is accessible for management activities.
- Parcel can be managed economically due to location, topography, vegetative community and other concerns.
- Parcel is located such that management activities such as burning, timber harvest and other activities will not be restricted.
- Parcel can accommodate proposed priority uses and management activities without degrading its natural value.
- Parcel can be protected from future degradation by activities occurring on neighboring properties.
- Parcel is contiguous to other SCDNR properties.

**5. Riparian and Hydrologic Values:** The parcel contains wetlands or other special riparian or hydrologic values that have ecological values such as unique habitats, flood control, sediment filtration, and contaminant filtration.

- Parcel is situated on a river, stream or marine shore.
- Parcel has extensive river, stream or marine shoreline.
- Parcel includes the 100-year floodplain.
- Parcel includes a designated scenic river, stream or wetland.
- Parcel contains minimum 50-foot buffer of trees along shorelines as a sediment buffer.
- Parcel contains ecologically significant wetlands such as isolated bays, bogs, depression meadows and ponds.
- Parcel is adjacent to or near other protected wetlands.
- Parcel includes the surface watershed or the recharge area of a ground water aquifer of a public water supply.

**6. Forest Sustainability:** The potential of a parcel to produce forest products including productivity, accessibility, vegetative community, standing timber, management history and location.

- Parcel has the soil productivity and natural vegetative community to produce high quality timber, pulpwood and other forest products.
- Parcel has growing timber stock in place.



- Parcel is located such that products can be transported a reasonable distance to a user.
- Parcel has the ability to access the timber for removal.
- Parcel has the ability to be managed for forest products due to its history and current condition.
- Parcel has diverse timber age and type and creates or provides the opportunity to create species diversity on the property.

**7. Archeological, Cultural, and Historic Resources:** The parcel contains known or likely sites of significant historic or cultural value.

- Parcel contains forest related cultural resources such as a historic forest, mill site, tar kiln or other forest industry site.
- Parcel contains other historic or archaeological resources such as Native American sites, historic structures or historic sites.

**8. Geologic Features:** The parcel provides an opportunity to protect outstanding geologic features.

- Parcel contains significant rock formations/waterfalls.
- Parcel contains significant earth strata.
- Parcel contains limestone bluffs

**9. Level of Conversion Threat:** The parcel is threatened by conversion into land uses such as residential development, commercial development, infrastructure development, or subdivision into smaller parcels.

- Parcel is in danger of conversion to non-forest use within 10 years.
- Parcel is currently for sale on the open market.
- Parcel may remain wooded, but will become further subdivided within 10 years.
- Parcel is located where infrastructure extensions and improvements are imminent.
- Parcel may remain wooded, but is in danger of non-sustainable management.

**10. Special Considerations:** The parcel has special attributes that are not accounted for in criteria.1-9.

Examples of special considerations include but are not limited to:

- Parcel is located within an area of special interest to the SCDNR such as a focus area or along a State Scenic River corridor.
- Parcel borders a scenic highway and/or contains a panoramic view or other scenic resources.
- Parcel is available at a low cost per acre.
- Parcel is located in an area where no other public land is available.
- Parcel has a desirable size and shape.

- Parcel has established roads or wildlife openings.
- Parcel is located near other areas of conservation efforts.
- Parcel is an outstanding example of an undisturbed ecosystem indigenous to South Carolina such as a Carolina bay or spartina marshlands.
- Parcel provides excellent opportunities for education or research related to the agency mission.
- Parcel has excellent potential to be developed into valuable wildlife habitat, particularly when parcel connects other protected areas.
- Parcel is located in an area with limited public recreation, or limited resource protection in place.
- Parcel will leverage significant conservation action or provide opportunities on adjacent tracts.

### Tools for Land Protection

Land acquisition in ACE Basin NERR has required a mix and match of strategies, generally grouped as “non-regulatory.” These options have usually required government action, but are typically accomplished in part by organizations and partnerships working outside of a formal government framework. For example, the ACE Basin Task Force (working in cooperation with federal, state and local governments, NGOs and private landowners) has proven extremely valuable in acquiring lands within the ACE Basin. Organizations such as the Lowcountry Open Land Trust, Edisto Island Open Land Trust, TNC, and DU are tax exempt, not-for-profit corporations. Therefore, donations and bargain sales to the conservation trust are usually considered charitable donations and may have federal and state tax consequences.

Organizations comprising the ACE Basin Task Force have provided expertise in arranging land transfers, drafting conservation easements, and explaining advantages and disadvantages of real estate transfers to both land purchasers and sellers. They have coordinated with and solicited aid from various foundations; and, in some cases, have provided funds up front for securing lands until grant monies can be obtained. They also serve as landowners and stewards of lands protected in ACE Basin NERR. Table 8 provides a summary of land protection activities within the ACE Basin NERR boundary.

**Table 8. Summary of land protection efforts within the ACE Basin NERR boundary.**

<b>Name of Tract (protected)</b>	<b>Type</b>	<b>Management Entity</b>
Airy Hall Plantation (1998)	Easement	Lowcountry OLT
Ashe Island (1989)	Fee Title	SCDNR-ACE NERR
Ashepoo Plantation (1993)	Easement	Ducks Unlimited
Bailey Island (1997)	Easement	The Nature Conservancy
Bear Island Club (2001)	Easement	Ducks Unlimited
Bear Island WMA (1953)	Fee Title	SCDNR
Beet Island (1989)	Fee Title	SCDNR-ACE NERR
Bennett's Point (1996)	Fee Title	SCDNR-ACE NERR
Big Island (1988)	Fee Title	SCDNR-ACE NERR
Bolders Island (1997)	Easement	Ducks Unlimited
Buzzard Island (2002)	Fee Title	SCDNR-ACE NERR
Cheeha-Combahee (1991)	Easement	Ducks Unlimited
Cut Marsh (1989)	Donation	SCDNR
Dawhoo Farm (2002)	Easement	Lowcountry OLT
Edisto Beach SP (1936)	Fee Title	SCPRT
Grove Plantation (1991)	Fee Title	USFWS
Hunting Island SP (1938)	Fee Title	SCPRT
Jehossee Island (1991, 1999)	Fee Title	USFWS
Morgan Island (2002)	Fee Title	SCDNR-ACE NERR
Musselboro Island (1994)	Easement	Ducks Unlimited
North Williman Island (2002)	Fee Title	SCDNR-ACE NERR
Old Combahee Island	Easement	The Nature Conservancy
Otter Island (1993)	Fee Title	SCDNR-ACE NERR
Prospect Hill, LLC (1999)	Easement	The Nature Conservancy
Pine Island (2002)	Fee Title	SCDNR-ACE NERR
Raccoon Island (1996)	Easement	Lowcountry OLT
Sampson Island (1988)	Donation	SCDNR
South Williman Island (1994)	Fee Title	SCDNR-ACE NERR
Springfield Marsh (1987)	Donation	SCDNR
Warren Island (2002)	Easement	SCDNR-ACE NERR
Wimbee Creek Farm (2002)	Easement	The Nature Conservancy

ACE Basin NERR has emphasized that all land acquisition projects must have “willing sellers” as a first order of priority. Consequently, the Reserve has focused, and will continue to focus, on five categories of land protection: 1) Fee Title; 2) Conservation Easement; 3) Donation; 4) Life Estate; 5) Management Agreement and 6) Private Capital.

*Fee Title Acquisition:*

The simplest way to protect land is to buy it outright. Acquisition priorities have included maritime forests, barrier islands, marsh islands, Kings Grant wetlands, tracts for public access, and facilities. Fee title acquisition has been accomplished through four variations:

- 1) Purchase at fair market value: The buyer (SCDNR or NGO) pays the seller fair market value for the property as determined by a qualified real estate appraiser.
- 2) Bargain Sale: The purchase of property below fair market value by a conservation organization. The difference between fair market value and the reduced price may qualify as a charitable deduction from income taxes for the seller.
- 3) Installment Purchase: The property is purchased over a period of years. Installment purchases allow the conservation buyer to spread the costs over a number of years.
- 4) Reserved Life Estate: The property is transferred to the agency upon the death of the individual landowner. This option allows landowners to sell now, but to continue to use their property during their lifetime and/or the lifetimes of other members of their immediate family. Because of the continued use, the purchase may be lower than fair market value.

An innovative approach for land conservation is the Land Bank. In 2002, the South Carolina General Assembly passed the Conservation Bank Act to establish a comprehensive state land protection program. The Bank will preserve the most significant natural and historic lands by either purchasing lands outright or buying conservation easements from willing sellers. It has provided significant dedicated funding for the purchase of wildlife habitat, parks, greenways, prime farmlands, historic sites, and other naturally diverse areas in SC. Funds come from a percentage of South Carolina's deed-recording fees, which are collected when real estate is sold in the state.

#### *Conservation Easement*

The Conservation Incentives Act also allows landowners to receive tax incentives for preserving their land through easements. With certain limitations, the Act provides a state income tax credit for voluntary donations of land conservation, and for conservation easements that qualify as charitable deductions under federal tax law. This legislation has been in effect since 2001.

ACE Basin NERR has worked with TNC, DU, and the various Land Trusts in securing easements in Reserve boundaries. All easements are tailored to the individual needs of the private landowner and allow certain traditional uses (i.e., timber management, hunting, fishing, agriculture). However, all easements restrict all or a portion of the land to limited development uses (number of houses, types of development, etc.). All easements in the Reserve specify that portions of the land remain undeveloped in perpetuity.

### *Land Donation*

Private landowners occasionally donate land to the Reserve. Gaylord Donnelley, owner of thousands of acres on the Ashepoo River, donated several maritime islands (~ 3,890 acres) to ACE Basin NERR in 1989. This donation was valued at almost \$4.0 million and provided the required match for subsequent land acquisitions in the ACE Basin.

### *Life Estate*

Perhaps the most significant tract of land in the ACE Basin is Botany Bay Plantation, which was bequeathed to the State through a Life Estate. This 4,678-acre property will be incorporated into ACE Basin NERR upon official approval of amending the current boundaries.

### *Management Agreement*

Long-term conservation is also possible through the implementation of management agreements. In some situations, this tool is more effective than fee title or management of conservation easements.

### *Private Capital*

ACE Basin NERR has successfully worked with public-private partnerships to protect land. Local governments may convince private developers or business to contribute to a land acquisition through cash donations or value of lands donated to the project. The Reserve has recently worked with a local Land Conservancy in protecting over 1,150 acres in the CAWS Focus Area just north of ACE Basin NERR boundaries. The Reserve has relied heavily on its strong alliance with TNC in most land acquisitions. TNC has been instrumental in working with staff to identify key lands, which support unique habitats and secure these properties up front with private capital. ACE Basin NERR will expand partnership efforts over the next five years to include emerging entities such as the Edisto Island Open Land Trust.

### *Coastal and Estuarine Land Conservation Program (CELCP)*

The CELCP Program holds significant promise to augment ACE Basin NERR land acquisition efforts. The SC CELC Program will focus on protection of properties that:

- Contain significant natural and/or rare habitats;
- Enhance ongoing conservation efforts by serving as buffers and providing wildlife corridors;
- Contain historical sites; and
- Serve to protect aesthetic values and water quality.

### *Protected Lands within the ACE Basin NERR*

#### *Proposed Land Protection*

Long-term protection of lands identified in Table 9 is important to preserving the ecological integrity of the Reserve. ACE Basin NERR will use an opportunistic approach in acquiring lands. Much work remains to be done in cooperation with the private landowners and negotiations on these tracts are far from complete.

**Table 9. Priority lands Proposed for Acquisition and Protection (2011-2016).**

<b>Tract</b>	<b>Acreage</b>	<b>Protection Type</b>
South Williman In-Holding	01	Fee Title Purchase
S. Hutchinson Island	3,123	Conservation Easement
<b>TOTAL</b>	3,124	

*South Williman Island In-Holding*

This is a one acre out-parcel located on South Williman Island and abutting the Reserve's property in Beaufort County. The property is owned by a local businessman and used as an outdoor retreat or camp. A high priority is assigned to this land acquisition project due to its critical location within the Reserve. The habitat type is primarily South Atlantic Inland Maritime Forest and the upland is located on deep-water. If acquired, this tract would become a component of the core area and be managed in protected-status for research and education.

*South Hutchinson Island*

This 3,123-acre island located within Reserve boundaries on the Ashepoo River and Rock Creek. This tract would be an ideal addition to the core area because of its geographic and ecological characteristics. The main island to the north is used more extensively for hunting and is under intensive wildlife management. South Hutchinson contains large expanses of undisturbed marsh and tidal creeks. The current owners are conservation-friendly and the uplands are not presently threatened under this ownership. However, recent biological surveys of the hammock islands on South Hutchinson Island indicate some unique ecological characteristics that should be formally protected for research and education purposes.

## **Public Access Plan**

### **Introduction**

The ACE Basin NERR provides the public valuable sites to pursue recreational interests. Currently, there are 17 improved boat landings and two canoe launching sites in the area. Public use occurs on two state parks, a national wildlife refuge, two wildlife management areas and the ACE Basin NERR. There exists a constant demand for public access and nature-based activities on available lands. There are businesses already operating in and around the ACE Basin that provide visitor-related services and access. Kirkley (1999) found:

- Outfitters providing access into and around the ACE Basin offer available experiences ranging from guided kayak tours to bareboat and captained sailing trips to hunting trips;
- Publicly managed properties with limited visitor amenities provide access to protected lands, but little more in terms of amenities or interpretive programming;
- Boat landings and marinas that provide adequate access points to the Basin's waterways;
- Lodging properties that are in some way unique to the area, but not destination quality or signature properties of the ACE Basin;
- Restaurants that reflect some aspect of the local character, but only a couple of which offer an excellent menu and presentation;
- A memorable setting that reflects the area's character;
- Historic sites and museums that are "windows" into the area's history, but none of which are singular in defining an historic event or period;
- Excellent locations for birdwatching among diverse habitats from coastal islands and maritime forests, to pine/mixed hardwood uplands to agriculture fields; and
- Annual festivals and events that, while not destination-quality, offer insight into the character of the area's communities.

### **Public Access and Use of the Reserve**

The Reserve will encourage stewardship of our coast by exposing visitors to representative aspects of the ACE Basin through education programs and facilities, and continued opportunities to pursue compatible recreational activities. Moreover, the Reserve will work closely with partners across the region to coordinate education activities for the benefit of the resource and people. Through partnerships, the Reserve

will work to help provide high quality access that does not compromise the integrity of the ACE Basin's natural and cultural resources. Maintaining the Reserve as a vibrant ecosystem will be the overriding consideration when determining where and when public access occurs. Refer to the Resource Protection Plan included in this document for details relating to the desired future condition of the Reserve.

### Network of Facilities

The vision for public use in the ACE Basin NERR involves a network of interpretive, educational, and recreational facilities that take advantage of the resources of two state parks (Edisto Beach State Park and Hunting Island State Park), one Federal/State National Estuarine Research Reserve, two state Wildlife Management Areas (Donnelley WMA and Bear Island WMA), and one U.S. Fish and Wildlife Refuge (E.F. Hollings ACE Basin National Wildlife Refuge). These facilities become additional points of entry and interpretation centers for visitors to the ACE Basin. The critical components are:

- A centrally located education/interpretive center to serve as the primary visitor reception center and provide a broad overview of the ACE Basin, along with a limited number of low-impact, environmentally sensitive accommodations on-site to establish a nature-based visitor destination; and
- Five satellite interpretive and recreation areas strategically located throughout the Basin.

The need to involve multiple facilities is a function of several aspects of the ACE Basin. The area, which is defined by three rivers and a number of Sea Islands, is large with no single route of entry. As a result, key locations as close as seven miles apart may require an hour drive by land. Second, there already exist a number of existing properties and facilities that offer opportunities for education, recreation, and nature-based tourism. Finally, the diverse habitats and cultural assets of the Basin require multiple public properties for adequate representation.

The following list describes the network of public facilities that will provide educational, recreational, and scientific research opportunities to both residents and visitors to the ACE Basin NERR.

- **Environmental Learning Center:** Designed in an environmentally sensitive manner, the Center will serve as a hub from which visitors can be directed to satellite locations. The experience at this center is expected to provide an overview of the ACE Basin and satisfy the greatest number of visitors, providing them with a fundamental appreciation for the natural environment and the area's history and culture.



- **Edisto Beach State Park:** The State Park, located on the northeast side of ACE Basin NERR, provides the general public with educational and recreational opportunities to experience and better understand the importance of estuaries and their significance to South Carolina. It could also be a catalyst for expanded NBT opportunities in the Reserve
- **Hunting Island Interpretive/Education Center:** Located nearly three hours away by car, the Hunting Island Interpretive Center is designed to complement the Edisto Beach program. This Center is expected to meet the overwhelming public demand for informative programs on coastal dynamics and barrier islands. This Center will closely look at the constantly changing marine environment and how biological communities and environments respond.
- **Donnelley and Bear Island Wildlife Management Areas:** Both properties offer varied inland maritime environments that are home to a wide range of wildlife such as deer, waterfowl, alligators, turkey, southern bald eagles, and wood storks. Impoundments, remnants of the ACE Basin's rice cultivation period, are present on both properties. Opportunities for birding and public hunting are excellent.
- **ACE Basin National Wildlife Refuge-Grove Plantation:** The refuge encompasses more than 11,000 acres and provides an excellent environment in which to observe wildlife, including deer, turkeys, waterfowl, and wood storks. The property is also the site of a restored plantation home that is representative of historic Lowcountry and ACE Basin architecture and design.
- **Westvaco Nature Trail:** This satellite facility provides visitors with an appreciation for a blackwater swamp, which is characteristic of the upper ACE Basin. It gives visitors an idea of the importance of rivers in shaping the submerged lowlands and defining the Basin's wetlands habitat and emphasizes the practice of sustainable forest management. Its convenient location at Jacksonboro will allow visitors to identify opportunities for more in-depth experiences at other satellite locations throughout the Basin.
- **The Great Swamp:** The Great Swamp Sanctuary in the City of Walterboro offers visitors the opportunity to experience the history and culture of the ACE Basin in a southern lowlands setting. Just three minutes from I-95, it is positioned to serve

as the western gateway to the ACE Basin. This 842 acre property features a network of boardwalks, hiking, biking and canoe trails that provide access to blackwater bottomland. Its historically significant features include the Colonial-era Charleston-to-Savannah Stagecoach Road, which still bears the cypress remnants of long-fallen bridges.

### Commercial Eco-tours

Nature-based tours conducted by commercial entities (aka eco-tours) may provide a valuable service to our visitors by giving them access to resources that might otherwise be inaccessible and/or educational experiences that are currently beyond the capacity of the Reserve to deliver. However, like all uses, eco-tours must be managed to ensure that they do not negatively impact the resources that are the focus of our management. To protect natural and cultural resources, the Reserve may limit number of visitors, areas available, and times available.

The Reserve will work to establish a formal framework for managing commercial use within the Reserve that is satisfactory to our parent organizations. As with all uses occurring in the Reserve, commercial use will first be evaluated to ensure that it is both appropriate and compatible with the primary management objective as outlined in the Resource Protection Plan associated with this document. In addition, the Reserve will seek a lead role in helping to craft recommendations for refining and clarify this policy as it relates to commercial uses. In the short-term, the Reserve will be guided by DNR policy #203.04 and the following list of principles:

- Activities must abide by all applicable laws and regulations, and not present an impediment to achieving the mission of the Reserve, DNR or NOAA;
- The use must not interfere with the use and enjoyment of the property by private individuals not participating in the tour;
- In situations where access is limited, private citizens visiting the property on their own will be given precedence over commercial use;
- Programs must present accurate information that encourages positive coastal stewardship;
- All activities are coordinated with the Reserve;
- Limits on where, when, and how many tours may be allowed are prescribed, as needed, to mitigate impacts to natural and cultural resources, and infrastructure; and

- A fee structure should be implemented that compensates the Reserve and/or partners for costs associated with implementation of the program and impacts to infrastructure.

### Opportunities for Public Involvement

ACE Basin NERR creates opportunities for members of the public to contribute to, and benefit from, the Reserve through direct participation in Reserve operations. Public involvement results in an increase in manpower at minimal costs and a positive connection between the community and the Reserve. On Edisto Island the Reserve has cooperated with SCPRT in developing a strong volunteer base that supports operation of the Environmental Learning Center. Likewise, a developing volunteer program at Botany Bay Plantation provides substantial support to the Reserve. In return, the Reserve offers opportunities for hands-on participation in stewardship activities associated with management, education, research and stewardship.

It is the intent of the Reserve to build our fledgling volunteer efforts into a coordinated program that actively engages volunteers, according to their interest and talent, in a wide range of Reserve activities. These activities include, but are not limited to:

#### Education:

- programs on-site in the Reserve
- field trips with more in-depth coverage
- public presentations
- workshops
- visitor orientation

#### Stewardship:

- monitoring public use activities
- monitoring of endangered/threatened species
- trail clearing and maintenance
- posting and maintenance of signage
- land protection activities

#### Research / Monitoring:

- field assistance
- clerical work
- boat / vessel maintenance

#### Administration:

- preparation of reports
- preparation and distribution of volunteer information

## **Resource Protection Plan**

### **Introduction**

The ACE Basin NERR resource protection plan provides a coordinated, proactive framework to address Reserve management responsibilities and federal/state obligations. Under federal law, all NERR sites are managed to ensure that Reserve ecosystems will continue to be available for long-term estuarine research, education and interpretation.

Protection of the natural resources and ecological integrity of the Reserve relies on existing state and federal statutory authority, a comprehensive management plan, and implementation of appropriate public use management strategies. Continuing traditional uses that are consistent with primary Reserve objectives is considered critical to achieving the mission of the ACE Basin NERR.

Desired future condition (DFC) is a term used to express pragmatic ideas about ecosystem futures. It encompasses the potential for human use interwoven with the natural resource or ecological legacy and condition that will exist as a result of attaining mutually compatible resource objectives (Caplan, 1992). The DFC for Reserve is an ecosystem containing all the ecotypes now existing on the properties, and the plants and animals that occur within them. It is recognized that some of these ecotypes and communities may shift spatial-temporally because of natural events such as succession and events that alter succession, such as fire or major storms. However, in the core area, where the Reserve exercises primary management authority, activities of people must be managed so that they do not compromise the stated DFC.

ACE Basin NERR continues to apply and refine an approach to resource management that addresses the needs of the ecosystem in a balanced manner. We seek to maintain a healthy, productive and resilient ecosystem that can provide the services that humans want and need. Management decisions will consider ecological, economic and social factors in determining how to best maintain and enhance environmental conditions. However, the Reserve will adhere, first and foremost, to the principle that human uses of the Reserve managed lands are both appropriate and compatible with achieving the DFC according to DNR policy #203.04.

### **Role of the Stewardship Sector**

#### ***Connection to strategic plan***

The stewardship sector leads resource protection efforts through implementation of the management plan. Strategies pursued by the Stewardship Sector are summarized in Table 10.

**Table 10. Summary of strategies employed by the Stewardship Sector.**

Goal 2:							
Improve the ability of the ACE Basin community to act as good stewards of the ACE Basin							
Objective 2a: Community information needs regarding stewardship of the ACE Basin are assessed through censuses of program audiences and partners.							
Strategies:							
• engage fully in the ACE Basin NERR Advisory Committee, CTP coordinating committee facilitating exchange of information with community leaders representing all facets of our programs							
• conduct formal surveys of audiences							
Objective 2b: Audiences and partners are equipped with the information necessary to understand, appreciate and advocate for their estuaries.							
Strategies:							
• deliver timely, audience-driven, conservation-oriented information to support the public in protection of their resources (ex. Circle Hooks for Conservation, seminar series, monofilament recycling centers)							
• provide education programs to enhance the understanding, appreciation and conservation of estuaries for a broad spectrum of the public							
• encourage and support stewardship ethic by enabling hands-on activities for the general public							
Objective 2c: Common goals of the ACE Basin NERR and reserve partners are advanced through coordinated action.							
Strategies:							
• build relationships that support Reserve programs through participation in initiatives with partners							
• support the NERRS through participation in system-wide efforts							
• promote collaboration between local governments to assist effective land-use planning and solve complex environmental problems							

Goal 3:							
Enhance the capacity of the reserve to act as an important contributor to the ACE Basin community, DNR and NERRS							
Objective 3a: Staff have a clear understanding of their role within the Reserve and are provided opportunities to develop existing skills and learn appropriate new skills that support their role.							
	Strategies:						
	• Reserve planning clearly communicates staff roles						
Objective 3b: Communication is improved within the Reserve, and between the Reserve and partners.							
	Strategies:						
	• encourage staff interaction among sectors						
Objective 3c: Programmatic connections between the ACE Basin NERR and DNR, NOAA\ERD, other reserves, and local partners are reinforced.							
	Strategies:						
	• staff actively share their expertise and resources with our partners, particularly our parent organizations						
Objective 3d: High quality facilities, equipment, and services are available for reserve staff and partners.							
	Strategies:						
	• monitor and maintain the condition of reserve facilities and equipment						
	• identify equipment and facility needs, then plan and implement fixes						
	• provide visitors to the Reserve with material and informational support.						

### Priority Topics

Activities for the stewardship sector are guided by priority topics, which include emergency wildlife response, reserve property monitoring and promotion of stewardship ethic utilizing public outreach events. Staff will help coordinate Reserve efforts around both acute events and long-term land stewardship initiatives such as the ACE Basin Project. The stewardship sector will continue to respond to emergency wildlife calls including marine mammal stranding, sea turtle stranding, wildlife entanglement in fishing gear, and other wildlife impact related events, such as fuel spills. Available partnerships and resources are utilized in response calls.

Reserve property is monitored to ensure the long-term protection of resources found within the ACE Basin NERR the Reserve must maintain an understanding of the resources present and the interaction among and between the physical, chemical and biological components of the Reserve. In addressing Reserve Goal #1, staff will continue to conduct surveys of Reserve lands, as practicable to include assessment of human

activities, invasive plant species, and nesting of non-game species. Particular attention is given to impacts on the addressed resource. Results of surveys will be used to inform management practices both through direct management of invasive and imperiled species and prescribing parameters for the public use that ensure resources will be adversely impacted. Reserve staff will relay data collected and information gathered by hosting outreach events open to the public. Such outreach opportunities are utilized to promote stewardship ethic in and around the Reserve.

#### Priority Audiences

In addition to direct management actions the Reserve will help the broader ACE Basin community to act in a similar manner (Goal #2) by understanding their information needs, efficiently and effectively delivering that information, and coordinating with partners to effect common goals.

Priority audiences addressed in stewardship outreach efforts include other agencies and organizations, ACE Basin NERR Advisory Committee, stakeholders of the ACE Basin, and the general public. Other agencies and organizations with similar research and/or educational missions are targeted as partners to better facilitate community outreach. The Reserve will continue to nurture relationships with these agencies and organizations, as well as the ACE Advisory Committee, enhancing coordination to positively impact common goals. Formalized programs of the Reserve will continue to target stakeholders of the ACE Basin and audiences from the general public. Formal programs will continue to conduct surveys of target audiences and use the results to tailor programs to meet identified needs. Outreach program objectives are to raise awareness of stewardship take home messages and utilize participant feedback to meet identified outreach needs.

#### Partnerships and Collaboration

Through vigorous participation in initiatives of common interest the Reserve will strengthen partnerships with key partners. Outreach offerings are hosted in collaboration with a variety of partners including South Carolina Audubon, South Carolina State Parks, Nemours Wildlife Foundation, South Carolina Aquarium, Clemson University Extension/Project Carolina Clear, The Lowcountry Institute, and North Inlet Winyah Bay NERR. The Stewardship Sector partners within the Reserve with both the Education and CTP sectors. Stewardship and Education collaborate on a variety of programs, including the “Grasses is the Classes” initiative and ACE Basin Teacher Workshop. The Stewardship and CTP sectors work together in hosting workshops on topics such as invasive species, rain water harvesting, and water quality issues. The Stewardship sector will continue to identify avenues for both partnership and collaboration.

Finally, like all other sectors, the Stewardship Sector will actively participate in enhancing the capacity of the Reserve to achieve its goals (Reserve Goal #3) by identifying way that the Reserve may invest in the development of staff, improve the quality and efficiency of Reserve assets and processes, and strengthen the support of the Reserve by partners.



### Monitoring and Evaluation

The Stewardship Sector aims to increase awareness and knowledge of natural resources by the general public and ACE Basin stakeholders. This objective is reached through outreach opportunities in both the field and lecture settings, as well as hands-on volunteer opportunities. Additionally, outreach opportunities aim to increase the NERR and DNR visibility by highlighting agency and Reserve properties, projects and partnerships. These efforts are evaluated by gathering outputs and outcomes per educational opportunity. Output information is gathered including the number of participants, the number of those wait-listed and participant demographics. Outcome information is gathered by evaluating and collecting perceived information gain, utilization of information, and desired future offerings by participants. The Stewardship Sector is also involved with efforts to monitor the Reserve based on priority topics. Many of these efforts utilize the aid of volunteers and will focus on non-game species nest counts, invasive species land coverage, visitor use impacts, etc.

### South Carolina Coastal Zone Management Program

The purposes of Act 123 of the 1977 South Carolina General Assembly were to “*establish the South Carolina Coastal Council and provide for its powers and duties for the protection and improvement of coastal tidelands and wetlands under a coastal zone management plan; provide for enforcement of policies of the Council and penalties for violations; and authorize legal proceedings for the determination of tideland properties.*” Act 123, better known as the South Carolina Coastal Management Act, was implemented in accordance with the Federal Coastal Zone Management Act, as amended (P.L. 92-583, 94-370) and a subsequent coastal zone management program was developed and approved by the U.S. Secretary of Commerce in 1979 which met the requirements of 15 CFR part 923 (Federal Register, March 1, 1978).

#### 1. Management of Critical Areas

The SC Coastal Management Act defines the critical area as all coastal waters, tidelands, beaches, and primary ocean front sand dunes within the coastal zone of the state. A permit is required for any activity that impacts a critical area. In order to receive a permit, the activity must be evaluated in accordance with a strict set of policies and regulations. In summary, the policies for wetland areas prohibit permanent alteration of productive salt, brackish, or freshwater wetlands unless there is an overriding public interest, no feasible alternatives, and all environmental impacts are minimized. Regulated activities include not only major activities, such as dredging and filling, but also activities such as pipelines, power lines, docks, piers, intact structures and many others.

#### 2. Management of Upland (Non-Critical Areas)

The Federal CZMA and SC Coastal Management Program require consistency of all direct and regulated state and federal activities that occur in the designated coastal zone of SC. This includes the entirety of all eight coastal counties that border the Atlantic Ocean. Therefore, any activity that requires a state or federal permit must undergo a CZM

consistency determination by OCRM/DHEC before the permit can be issued by the issuing state or federal agency. The policies used to make a consistency determination are similar to those required for critical areas. The Council has a memorandum of agreement with all regulatory state agencies that establishes a consistency determination review procedure. Federal regulations (15 CFR 930) establish a review procedure with federal agencies (Table 11).

**Table 11. Permits reviewed for Coastal Zone Management consistency.**

Section 404 permits	Water Supply permits
Section 401 permits	Underground Tank permits
Wastewater permits	Mining permits
Air Quality permits	Capacity Use (Wells) permits
Landfill permits	NPDES permits
State Navigable Water permits	Section 10 permits
U.S. Coast Guard Bridge Permits	Septic Tank permits

Activities associated with the above permits, which result in a land disturbance (i.e., subdivisions, malls, gas stations, etc.), must submit specific plans to address policies and approved guidelines of the CZM Program. These plans must include: stormwater management plans, wetland management plans and dock master plans, if applicable.

Regarding ACE Basin NERR, the entire site falls within the coastal zone of SC; thus, any activity that requires one of the above listed permits must be consistent with the CZM Program and specific policies of NERRS.

### 3. Enforcement

OCRM/SCDHEC has an enforcement section of specially trained field biologists to ensure enforcement of the CZM Program. Weekly flights and daily routine ground patrolling by these officers represent the first level of enforcement. OCRM/SCDHEC also works in alliance with SCDNR whose conservation officers patrol coastal lands and waters on a daily basis. Noted violations are reported to OCRM/SCDHEC enforcement staff that conduct follow-up field inspections. SCDNR conservation officers are available for backup if needed. Fines for violations are up to \$1,000 per day.

Enforcement of activities requiring coastal zone consistency certification generally takes place through the agency issuing the permit. The majority of activities, however, require OCRM approval prior to permit issuance. For example, an OCRM/SCDHEC staff engineer conducts a site inspection to ensure the stormwater system is constructed according to the approved design before the applicant can operate a wastewater system. This provides a strong incentive to comply with the CZM Program. Additionally, OCRM/SCDHEC has an active Beach and Creek Watch program to provide a forum for citizen awareness and violation reporting.

OCRM/SCDHEC has implemented full authority in the coastal area through a system of “networking”, whereby cooperation has been developed between SCDNR and other state agencies. These agencies exercise some authority over: 1) the use of coastal resources, 2) specific areas in the coastal zone, or 3) activities in the coastal zone. This authority is granted through statutes of SC, most of which were enacted prior to the CZMA.

Enforcement of laws and regulations is an essential component of resource protection. A major goal is to prevent resource impacts or “preventive enforcement.” This is accomplished through frequent patrols within the ACE Basin watershed to deter violations. However, the ACE Basin is much too large an area to cover with limited manpower and many times violations go unnoticed. Recognizing such limited coverage, the enforcement philosophy is shifting toward “interpretive enforcement” where voluntary compliance is sought by informing users through educational messages and literature on responsible behavior before they adversely impact natural resources. Presently, this is accomplished through brochures and direct informative contact with users while officers and Reserve staff are on patrol.

#### Site Management of the Reserve: SC Department of Natural Resources

SCDNR is the state agency with statutory authority for protection, management and conservation of wildlife, wildlife habitat and marine resources, including fish, game, non-game and endangered species. Further details on site management are presented in the Administrative Plan of this document.

#### Cultural and Archaeological Resources

##### *Management Activities*

The goal of the cultural resources management section is to ensure the protection of historic properties located on the Reserve by planning in advance to protect cultural resources in perpetuity during both normal and emergency management activities. Should avoidance of cultural resources during management activities become impossible, this section will serve as a guide to protect the significant archaeological and historic resources on the Reserve. This section will be used in consultation with the Heritage Trust Archaeologist (HTA) and the State Historic Preservation Office (SHPO).

Avoidance of land disturbing impacts within the defined boundaries of known sites will be the preferred and primary management strategy. All eligible and potentially eligible sites will require further archaeological research if any impact is planned, unless measures acceptable to SHPO are implemented by SCDNR.

##### *Categorical Exclusions*

Some activities conducted on the Reserve have little to no potential to affect historic properties. These undertakings may occur in areas that have been surveyed for historic properties and do not contain historic resources. The following undertakings shall be categorically exempted from review by the SHPO:

1. Routine grounds maintenance such as mowing and tree trimming;

2. Landscaping such as in-kind paving repair and minor plant removal/ replacement;
3. Rehabilitation of existing trails with in-kind materials;
4. Paving existing roads or parking areas with grading limited to 0-8 cm (0-3 in.), or repaving with in-kind materials without grading or removal of existing surface;
5. Placement, maintenance, or replacement of utility lines, transmission lines, and fences within existing easements;
6. Routine forestry and timber management activities limited to the following:
  - a. plowing existing firebreaks
  - b. prescribed or controlled burns where no above ground architecture is present
  - c. timber harvesting without mechanical equipment
  - d. herbicide applications
  - e. pesticide applications;
7. Routine roadway, roadside, and drainage system maintenance activities; and
8. Construction or placement of buildings that require minimal site grading (0-8 cm [0-3 in.]), no foundations and no dug footings.

#### *Emergency Response to Catastrophic Event*

A plan was developed by SCDNR to deal with catastrophic events such as hurricane, tornados or wildfire. Such planning takes its lead from state law 36 CFR 800.12. Under this code, agencies develop procedures that address treatment of cultural properties when responding to disasters. The following Standard Operating Procedure (SOP) will be used when responding to emergencies on the Reserve. Immediate rescue and salvage efforts to preserve life and property are exempt. The current SCDNR strategy is to restore infrastructure as quickly as possible. Once accomplished, a period of evaluation would commence followed by timber salvage operations. The forest management plan would be utilized in case of a catastrophic event. Efforts will be made to avoid impact to the archaeological sites during the restoration of infrastructure.

Immediately after a catastrophic event the HTA will be notified. The HTA will coordinate with the SHPO and Native American groups to afford seven days to comment on activities. If SCDNR determines that circumstance do not permit seven days to comment, the HTA, SHPO and Native American groups will be invited to comment during the available time.

In the event of a major catastrophe (such as a major hurricane landfall), the SCDNR will take immediate action to assess obvious damages to historical structures and take preventive measures to reduce further damage. During the recovery phase and restoration of infrastructure the Heritage Trust archeologist will be on site for consultation on archaeological sites. During any timber salvage operations, the forest management guidelines will be followed.

#### *Inadvertent Discoveries*

Occasionally additional cultural resources may be discovered. These sites will be brought to the attention of the HTA and ground-disturbing activities shall cease in the immediate area until consultation with SHPO can occur. Sites will be entered into the Statewide

Archaeological site database and they will be evaluated for significance under the National Register of Historic Places criteria. Should funds or staff not be available to study and evaluate additional discoveries, avoidance of those sites will be the preferred management strategy.

If Native American remains or funerary objects are discovered, Federal Law stipulates that: “In the event of an inadvertent discovery of Native American remains or objects on the said lands, Section 3 (d) of the NAGPRA (P.L. 101-601) shall apply. The property management plan shall contain a standard operating procedure for notification of appropriate persons.” To address this mandate, the standard operating procedure developed by SCDNR is:

Notification: In the event that human remains, funerary objects, sacred objects, or objects of cultural patrimony, as defined in the Native American Graves Protection and Repatriation Act (25 U.S.C. 3001 et seq.), are discovered inadvertently on the Reserve, the Project Leader, or a qualified designee, must provide immediate telephone notification of the inadvertent discovery, with written confirmation, to the Heritage Trust Archaeologist and the SHPO. If written confirmation is provided by certified mail, the return receipt constitutes evidence of the receipt of the written notification by the SHPO official or Indian tribe official.

Ceasing Activities: If the inadvertent discovery occurred in connection with an ongoing activity, the Project Leader, in addition to providing the notice described above, must stop the activity in the area of the inadvertent discovery and make a reasonable effort to protect the human remains, funerary objects, sacred objects, or objects of cultural patrimony discovered inadvertently.

Consultation: For discoveries found on the Reserve, the SCDNR will consult with Native American tribes claiming cultural affiliation.

Resuming Activities: The activity that resulted in the inadvertent discovery may resume thirty (30) days after certification by the notified SHPO of receipt of the written confirmation of notification of inadvertent discovery if the resumption of the activity is otherwise lawful. The activity may also resume, if otherwise lawful, at any time that a written, binding agreement is executed between the SCDNR and the affiliated Indian tribes or organizations that adopt a recovery plan for the excavation or removal of the human remains, funerary objects, sacred objects, or objects of cultural patrimony. The disposition of all human remains, funerary objects, sacred objects, or objects of cultural patrimony must be carried out in accordance with the NAGPRA Act. Consultation with tribes shall also take place via telephonic or electronic correspondence.

#### *Archaeological Research and Investigations*

Research and study opportunities will be encouraged. Archaeological investigations will be allowed when reviewed and approved by the Preserve Manager/Wildlife Biologist, Heritage Trust Archaeologist and SHPO. Requests by professional archaeologists to work on the property must be submitted in writing along with a detailed research design and

vitae of project principals to the South Carolina Heritage Trust Archaeologist, PO Box 167, Columbia, SC 29202. The archaeologist must meet or exceed the Standards of the Secretary of the Interior (48 F.R. 44738- 44739) and act pursuant to the criteria set forth by the South Carolina State Historic Preservation Office Guidelines and Standards for Archaeological Investigations.

#### *Public Visitation and Use*

Recreational activities are encouraged on within the appropriate zones of managed properties. Within the Reserve these activities include, hiking, plant and wildlife observation and photography, hunting, camping and other activities compatible with the primary management objective. These activities may be temporally or spatially restricted as needed to ensure proper stewardship of the natural and cultural resources located within and adjacent to the preserve. In addition to judging whether a particular activity is compatible with the primary objective, the manager must determine whether the volume and intensity of activities, alone or in aggregate, can be sustained without compromising ability to achieve the desired future condition (DFC) described earlier in this section. Given sufficient resources, the Reserve will pursue a better understanding of the impacts of all uses of the Reserve and enact strategies to control and direct those uses so that the DFC will not be compromised.

#### *Management Policy*

The Reserve is established as a natural field laboratory for research and education. The core area, where the Reserve exercises primary management authority, is managed according to specific policies designed to protect habitat integrity of the site while allowing for continuation of appropriate and compatible uses. Management of formally designated and protected conservation areas within Reserve boundaries (i.e., Bear Island and Donnelley Wildlife Management Areas) is conducted according to established site-specific management plans developed by SCDNR. Private lands formally protected through conservation easements, management agreements, etc. in the Reserve are managed exclusively according to guidelines established in said agreements and by the organization holding the easement. The Reserve's approach to specific issues is outlined below. This list is not static: the Reserve maintains the flexibility to develop and implement actions around new issues as they are identified.

#### **Fish and Wildlife**

*Position: Game and non-game species are managed to preserve overall health of various populations within the Reserve and to maintain important fish and wildlife habitat. SCDNR works cooperatively with private landowners to establish Reserve-specific wildlife management plans.*

Where compatible, Reserve lands will be open to public hunting and fishing. Maintaining natural communities that exist in the Reserve is critical to sustaining fish and wildlife populations. Their extent, configuration, and distribution provide natural movement

corridors throughout the area. It is important that we ensure the right to hunt and fish and to preserve and/or enhance existing game species habitat.

### **Endangered and Threatened Species**

*Position: Areas within the Reserve identified as possessing endangered or threatened species are managed to preserve and protect the species. The presence of an endangered or threatened species does not necessarily preclude compatible uses of an area.*

ACE Basin NERR will integrate the protection of natural areas and sensitive species into local decision-making and increase relevant scientific knowledge through coordination with appropriate agencies and natural resource experts on requirements of sensitive species.

### **Wetlands**

*Position: All tidal and non-tidal wetlands located within or along Reserve boundaries are protected in a natural condition. Wetlands include bogs, swamps, isolated freshwater wetlands and tidal vegetated marshes, tidal and non-tidal impoundments and un-vegetated flats. Wetlands are largely intact in the Reserve and should be maintained as such. ACE Basin NERR takes a proactive conservation stand on wetland resources, including land-based activities that may affect adjacent wetlands. Wetlands in the Reserve serve to enhance water quality, mitigate flooding, and produce a wealth of productive and diverse habitats for fish and wildlife throughout the region.*

### **Impoundments**

*Position: The functional resource values of well-managed impoundments are recognized in the context of manipulated wetland ecosystems. SCDNR provides technical guidance to owners of private impoundments so as to enhance related habitat values to waterfowl and other wetland-dependent species. Construction of new impoundments and physical alteration of existing impoundments are regulated through OCRM/DHEC. Any such alterations in the Reserve are evaluated under existing authority with careful consideration of effects on the whole system.*

### **Traditional Uses**

*Position: Traditional recreational and commercial uses of natural resources within the Reserve shall be allowed to continue as long as they do not disrupt the natural integrity of the site or interfere with research and educational activities.*

ACE Basin NERR has traditionally been used for hunting migratory game birds (including waterfowl), white-tailed deer, wild turkey, mourning dove, bobwhite quail, and other game species. Recreational fishing in the rivers, creeks, and impoundments and commercial fishing and shell fishing in Reserve waters are also recognized traditional uses. Each of these activities is currently subject to state regulation through required licenses, permits, boundaries, seasons, bag limits, catch limits, size limits and other laws.

Management of the NERR does not change the existing laws and regulations concerning these or any other traditional uses of the ACE Basin. Boundaries of the Reserve will not be used now or in the future to change or relocate established fishing grounds. Agriculture and silviculture activities within the Reserve are conducted in accordance with Best Management Practices (BMPs) established by SCDNR and the SC Forestry Commission.

### **Forests**

*Position: Timber management on Reserve lands is directed toward development and preservation of significant old growth stands. Disease, insect or exotic plant control and stand improvement considerations are controlling factors behind timber harvesting. Any harvesting of timber is conducted in accordance with guidelines established by SC DNR and other partnerships in the ACE Basin. SC DNR works with appropriate state and private concerns in developing inventories and evaluations of standing timber in the Reserve. Timber management meets or exceeds BMPs established by SCFC.*

### **Fire**

*Position: Fire is a natural process in forest ecology and an invaluable tool in wildlife management practices in this region. Any prescribed burning within the Reserve core area will be under supervision of experienced burners. Significant resources and structures, which are sensitive to fire damage, will be protected where possible.*

### **Mining and Excavation**

*Position: Excavation, mining, or removal of loam, gravel, rock, sand, petroleum, or minerals or alteration of topography are not permitted in the Reserve core area except as related to collection of geological and geophysical data. This policy does not affect activities grandfathered in the 1992 FMP / EIS. All permits are subject to monitoring by SCDNR / Land and Water Resources.*

### **Air Quality**

*Position: No industrial activities are permitted in the Reserve that have the potential to cause air pollution which exceeds acceptable air quality standards as determined by SCDHEC. Prescribed burning of impoundments and forest lands within the established boundaries will continue in accordance with existing statewide air quality standards. Air quality is monitored at appropriate sites in the Reserve.*

### **Shorelines**

*Position: Shorelines in the core area are preserved in their natural state and existing condition. Restoration of severely eroded shorelines in critical areas will be considered on a case-by-case basis. Activities are evaluated by SC OCRM with input from Reserve staff and are subject to permitting.*



### **Disposal of Dredge Materials**

*Position: Dredge material disposal shall be allowed to continue as a pre-existing use in the buffer zone but not in the established core area. Such activity will be restricted to existing disposal areas and designated easements. All spoil operations must comply with SC OCRM / DHEC and undergo the specified review process. Spoil disposal sites must be located, designed, and managed to prevent sedimentation of marshes, intertidal flats, and submerged lands. All dredge materials shall be placed in a manner consistent with the best technology available for the protection of natural resources. All dredging proposals shall be reviewed by Reserve staff and coordinated through SCOCRM / DHEC. Appropriate public input will be solicited during the review process.*

### **Archaeological and Historical Sites / Objects**

*Position: The Reserve coordinates with the SC Department of Archives and the SCDNR Heritage Trust Board / staff in the protection of historical / cultural resources. Such structures, where practical, are incorporated into the Reserve's education program.*

### **Industrial Activities**

*Position: No industrial activities shall be conducted in the core area of the Reserve, with the exception of commercial fishing. Industrial forest operations may continue in the buffer zone with a recommendation that they meet or exceed BMPs for the state and fall within existing laws governing such practices.*

### **Manipulative Research**

*Position: In order to preserve and protect the natural integrity of the Reserve, no manipulative research activities with a significant or long-term impact on Reserve resources will be allowed in the core area. However, habitat manipulation will continue in the buffer zone, since control of water levels has been historically used in waterfowl management activities. Also, maintenance of the AIWW occurs within the buffer as discussed previously.*

### **Disturbance of Plants and Animals**

*Position: Users of the Reserve shall not disturb or remove any live animals (except for fish, shellfish, game animals, furbearers, or waterfowl – see traditional uses) or vegetation in the core area unless it is part of an approved research / education program with all required permits. All pets must be under control in the Reserve core area.*

Removal and destruction of vegetation can lead to serious long-term damage to the ecosystems found in the Reserve by causing erosion / sedimentation and by decreasing species richness. Disturbing nesting birds and other animals can interfere with their natural habits, possibly causing the animals to leave the Reserve, thus diminishing

diversity. All public access points and nature trails in the core area will be compatible with this policy.

### **Camping**

*Position: Camping is allowed in designated areas of the Reserve by permit and season. Restrictions on fires and other uses are on the written permit. All users must pack out their own trash.*

### **Off-Road Vehicles**

*Position: ATVs, dune buggies, motorcycles, or other motorized vehicles will not be permitted in the core area except for research or management purposes.*

### **Coordination with Other Program Areas**

*Position: All land management decisions are coordinated with the SC Heritage Preserve and Wildlife Management Area program as appropriate.*

## **Construction Plan**

### **Introduction**

The ACE Basin NERR program is responsible for providing the facilities necessary to fulfill the Reserve's mission as established in federal law and interagency agreements. ACE Basin NERR facilities consist of a research field station, an education center, trails, other installations, and related operations and maintenance equipment. In support of Reserve goal #3, staff will monitor, maintain and enhance the condition of facilities. In practice, this means staff will continue, as necessary and practicable, to:

- maintain and improve facilities that are accessible to the public, support staff functions, and facilitate the Reserve's mission;
- provide fully accessible trails and signs to support the Reserve's mission and educational, research and stewardship objectives; and
- maintain facilities for public use while ensuring protection of natural resource integrity.

### **Guidelines for Facilities Development**

ACE Basin NERR facilities are created and operated to meet the goals of the Reserve while protecting natural resources to the maximum extent possible. Thus, the Reserve will be guided by the following set of principles in development of facilities:

- All facilities will, at a minimum, comply with requirements of the Americans with Disabilities Act;
- Facilities and access routes will create minimum visual or environmental impacts both within and beyond the boundaries of each component;
- To the greatest extent possible, facilities will be designed and located to support multiple Reserve goals;
- Planning for any significant new facility will solicit input from representatives of groups expected to use or be affected by the facility, including Reserve staff, local advisory committees, local government, site users, and the general public; and
- Wherever possible, facility construction will incorporate sustainable design elements, strive for energy efficiency, and anticipate advances in technology.

### **Existing Conditions and Perceived Needs**

Currently, the Reserve has established the Michael D. McKenzie Field Station at Bennett's Point, Colleton County, SC. This facility serves as on-site headquarters for

Reserve staff and as a staging area for research and educational activities in the Reserve. Also, the facility has provided overnight accommodations for researchers and educators working in the Reserve. The station includes a dock on Mosquito Creek, consisting of a 40' aluminum gangway and 20' floating dock attached to steel piling. Construction of an outdoor education center in 2006 added additional capacity to serve our education audience. The Reserve Biologist is stationed at the McKenzie Field Station to facilitate oversight of day-to-day operation of the facility and support activities occurring throughout the Reserve.

In addition, the Reserve has entered into a MOU with SCPRT to cooperate in providing educational and interpretive programs for the Reserve and community from the Environmental Learning Center located at the Edisto Island State Park. This operation has been challenged in finding and retaining qualified educators due to the lack of affordable housing in the area. In an effort to provide a more significant package of benefits to potential employees the Reserve and SCPRT partnered in 2008 to build a barracks, which in addition to supporting mutually beneficial efforts may house an interpretive educator for the Center. Volunteers also use the Environmental Learning Center and State Park as a focal point for supporting local Reserve activities.

Facilities constructed at the Edisto Beach State Park and McKenzie Center provide substantial capacity to advance the Reserve's mission. While these facilities are essential to many of the Reserve's most effective and vibrant programs, there exists additional potential to support programs at both facilities as currently constructed. As a result, no new construction is anticipated at either location during the next 5 years. However, the Reserve will continue to collect and analyze data associated with use of these facilities. These data will inform a periodic update on the condition of, and need for, facilities.

#### *Vision for Network Facilities*

The vision for ACE Basin NERR involves a network of interpretive, educational, recreational and research facilities which take advantage of two state parks, two state wildlife management areas, a USFWS Refuge, NERR and other public properties. These facilities become the points of entry and interpretation for visitors to the ACE Basin. The critical components are:

#### *McKenzie Field Station*

The Reserve's research field station is located at Bennett's Point on Mosquito Creek in proximity to the core research area. This facility is dedicated to estuarine and marine research and education. It provides office space for Reserve staff and volunteers, laboratory space for researchers working on-site, a classroom/community meeting room, restrooms, kitchen and overnight accommodations for researchers and educators. The facility is approximately 4,100 SF in size to meet the Reserve's research needs. The architectural design portrays an efficient, energy conscious building and sets the standard for future sustainable development in the community.

### *Environmental Learning Center*

The ACE Basin NERR, in cooperation with the SCPRT, designed and built a Learning Center specializing in estuarine education and interpretation. The center is located at Live Oak Landing within the Edisto Beach State Park. This facility provides a location for diverse indoor and outdoor educational programs and exhibits that encourage the responsible exploration, use and stewardship of coastal resources by fostering awareness and appreciation of the ACE Basin NERR. Explicit to the mission of this facility is the provision for natural resource-based recreational opportunities with emphasis on conservation, education and interpretation of the natural, cultural and historical resources of the ACE Basin. The facility is approximately 7,800 SF and consists of offices, conference room, exhibit galleries, aquarium, classroom, restrooms, outdoor decks, interpretive trails and dock. Construction was designed in a manner consistent with the application of sustainable technologies and with minimal environmental impact and protection of the view shed. This facility is designed to complement the other satellite facilities and accommodate family and school group educational activities.

### *Hunting Island Interpretive Center*

This facility, located on the southeastern edge of the Reserve, complements the Environmental Learning Center program on estuaries and coastal resources. It is expected to meet a significant public demand for programming on coastal dynamics and barrier islands. This center will focus on the constantly changing marine environment and how biological communities and ecosystems respond. This State Park facility is operated by SCPRT and design of the education center has been coordinated to complement the Edisto/ACE Basin NERR facilities.

### *Donnelley Wildlife Management Area*

The 8,048-acre DWMA is located in eastern Colleton County near Green Pond. The main entrance is immediately north of the junction of SC 303 and U.S. 17. DWMA is named in honor of the late Gaylord Donnelley and his wife Dorothy for the contributions they made to the ACE Basin Project and conservation across the continent. DWMA is managed by SCDNR through agreements with DU, and the U.S. Army Corps of Engineers, the principle landowners of the tract. This unique property is a cross-section of the lowcountry, encompassing a diversity of wetland and upland habitats: managed rice fields, forested wetlands, tidal marsh, agricultural lands, and a variety of upland forest types, including a natural stand of longleaf pine. The area is intensively managed by DNR to provide optimum habitat for a wide variety of wildlife and to provide public recreation and education. The area has two designated nature trails and miles of dirt roads for hikers and bicyclists. Late winter through early spring provides bird watching opportunities to observe a variety of species including waterfowl and migratory songbirds. Alligators are abundant in the managed wetlands and can be seen almost year round. Hunting opportunities are available to the public for white-tailed deer, waterfowl, dove, small game and furbearers.

### *Bear Island WMA*

Bear Island is also owned and managed by SCDNR and consists of 12,050 acres of managed wetlands, tidal marsh, woodlands and agricultural lands. The area is managed to provide high quality habitat for wintering waterfowl and wetland wildlife including endangered and threatened species such as woodstorks and southern bald eagles; to provide habitat for upland game and non-game species; and, to provide recreational activities for the hunting and non-hunting public.

### *USFWS National Wildlife Refuge*

The ACE Basin NWR is managed to provide a complex of habitats for wildlife diversity. Habitats are maintained and managed for endangered species, wintering waterfowl, other migratory and resident birds, mammals, reptiles, amphibians, and plants. Impoundments, formerly rice fields, are managed for habitat conditions favored by various wetland wildlife species. Forest management includes selective thinning of trees, clearing to create edge zones, hardwood and shrub planting and burning of some forest understory. The Refuge office, a former rice plantation house built in 1828, is one of only three antebellum mansions in the ACE Basin that survived the Civil War. Former owners ensured its preservation by placing it on the National Register of Historical Places.

### *Great Swamp Sanctuary*

The Great Swamp Sanctuary in the City of Walterboro offers visitors the opportunity to experience history, culture, recreation and education in a southern lowlands setting. The 842-acre Sanctuary features what may be the only “braided creek” swamp easily accessible to the public. A completed network of boardwalks, hiking, biking and canoe trails provide a perfect vantage point to observe the diversity of wildlife inhabiting the black water bottomland. The most historically significant of these paths follows the Colonial-era Charleston-to-Savannah Stagecoach Road still bearing the cypress remnants of long-fallen bridges. Located just three minutes from I-95, the Sanctuary is ideally positioned to introduce visitors to South Carolina’s lowcountry and the ACE Basin, in particular.

### *Edisto Nature Trail*

The existing three-mile trail serves as a network satellite facility and presently provides visitors with an understanding of and appreciation for a blackwater swamp, characteristic of the upper ACE Basin. It also demonstrates the role rivers play in shaping the submerged lowlands and defining the Basin’s wetland habitats. The trail also emphasizes the practice of sustainable forest management. Its location at Jacksonboro allows visitors to identify opportunities for more in-depth experiences at other satellite locations throughout the watershed. Access to the Edisto River is available by boardwalk. The trail is open year-round during day light hours except during periods of maintenance and irregular flooding of the Edisto River.

### *Boynton Nature Trail*

The two-mile Boynton Trail is located at Donnelley WMA and offers a unique Lowcountry experience and a glimpse of various ACE Basin habitats. Visitors walk through forested uplands, swamps, managed wetlands and all their associated flora and fauna. This trail is open from 8 a.m. to 5 p.m., Monday – Saturday, except during public hunts. The Boynton Trail closes from November 1 to January 21.

#### *Bear Island*

The impoundment dikes at Bear Island WMA are open to the public at various times of the year and offer an outstanding trail system. This system provides public access to the impoundments for fishing, birding, and hiking.

#### *Edisto Beach State Park Trail*

The Reserve has worked closely with SCPRT staff to develop a system of trails that enrich the experience at the Environmental Learning Center. New trails associated with the Bache markers and Spanish Mount highlight significant cultural sites from both pre and post European settlement.

#### *The Grove Trail*

Associated with the ACE Basin NWR, the Grove Trail provides access to coastal uplands, wetlands, and one of the few surviving Antebellum Plantation Homes.

#### *Boating Trail*

This 15-mile route allows small boat operators to view much of ACE Basin NERR and the flora and fauna associated with the lower ACE Basin estuary. The trail is delineated on a map available from the Reserve and boaters are encouraged to have navigational charts and depth finders.

#### *Roads and Parking*

The ACE Basin enjoys a strategic physical location between two of S.C.'s primary visitor destinations: Charleston and Beaufort-Hilton Head. U.S. Highway 17 is the main corridor for north-south bound traffic through the Basin. Access to the Edisto area is provided by Highway 174 and to Bennett's Point via Highway 26. Both roads are major routes and maintained by the SC Department of Transportation. All satellite facilities are accessible from Highway 17. Visitor parking is available at all public facilities within the NERR and the various network facilities.

#### *Signs*

Signage marking wildlife observation areas are posted along U.S. Highway 17. Most areas are readily accessible by paved roads and well marked along the way. The NERR boundaries are marked with colorful bright aluminum signs on land and water. Most of these were installed in 1993 and been secured in areas relatively inaccessible to the public, yet highly visible. Entrance and trailhead signs are installed at the various satellite facilities.

## **Memoranda of Understanding (MOU)**

### **MOA between State and NOAA**

Memorandum of Agreement  
Between the  
National Oceanic and Atmospheric Administration  
And the  
South Carolina Department of Natural Resources  
Detailing the state-federal roles in the  
Management of the ACE Basin National Estuarine Research Reserve

This Memorandum of Agreement states the provisions for the cooperative management of the ACE Basin National Estuarine Research Reserve (NERR) in the state of South Carolina, between the South Carolina Department of Natural Resources (SCDNR) and the National Oceanic and Atmospheric Administration (NOAA) Office of Ocean and Coastal Resource Management (OCRM).

WHEREAS, this Memorandum of Agreement supersedes the previous Memorandum of Understanding between NOAA and the state of South Carolina regarding the ACE Basin NERR made on 8/27/1992.

WHEREAS, the state of South Carolina has determined that the waters and related coastal habitats of ACE Basin NERR provide unique opportunities for study of natural and human processes occurring within the estuarine ecosystems of the state to contribute to the science of estuarine ecosystem processes, enhance environmental education opportunities, and provide scientific information for effective coastal zone management in the state of South Carolina; and

WHEREAS, the state of South Carolina has determined that the resources of the ACE Basin NERR and the values they represent to the citizens of South Carolina and the United States will benefit from the management of these resources as part of the National Estuarine Research Reserve System; and

WHEREAS, the National Oceanic and Atmospheric Administration has concurred with that finding and pursuant to its authority under section 315 of the Coastal Zone Management Act of 1972, as amended (CZMA, 16 U.S.C. 1461) and in accordance with implementing regulations at 15 CFR 921.30 has designated the ACE Basin NERR; and

WHEREAS, the SCDNR is responsible for managing the ACE Basin NERR and acknowledges the value of state-federal cooperation for the long-term management of the reserve in a manner consistent with the purpose of their designation; and

WHEREAS, the management plan describes the goals, objectives, strategies/actions, administrative structure, and institutional arrangements for the reserve, including this MOA and others;

NOW THEREFORE, in consideration of the mutual agreements herein, NOAA and SCDNR agree to the following:



## ARTICLE I: STATE-FEDERAL ROLES IN RESERVE MANAGEMENT

### A. South Carolina Department of Natural Resources' Role in Reserve Management

SCDNR shall:

1. be responsible for compliance with all federal laws and regulations, and ensure that the ACE Basin NERR management plan is consistent with the provisions of the CZMA and implementing regulations;
2. ensure protection of the natural and cultural resources of the reserve, and ensure enforcement of the provisions of state law, including rules and regulations of the South Carolina Coastal Management Program;
3. ensure adequate, long-term protection and management of lands included within the reserve boundary;
4. annually apply for, budget, and allocate funds received for reserve operations, research and monitoring, education and stewardship; and as necessary, land acquisition and reserve facility construction;
5. conduct and coordinate research and monitoring programs that encourage scientists from a variety of institutions to work together to understand the ecology of the reserve ecosystem to improve coastal management;
6. conduct and maintain programs that disseminate research results via materials, activities, workshops, and conferences to resource users, state and local agencies, school systems, general public, and other interested parties;
7. provide staff, and endeavor to secure state funding for the manager, education coordinator and research coordinator;
8. secure facilities and equipment required to implement the provisions within the reserve management plan;
9. ensure adequate funding for facilities operation and maintenance;
10. maintain effective liaison with local, regional, state, and federal policy makers, regulators and the general public;
11. serve as principal contact for issues involving proposed boundary changes and/or amendments to the reserve management plan;
12. respond to NOAA's requests for information, particularly cooperative agreement and grant progress reports and evaluation findings, including necessary actions and recommendations, made pursuant to Section 312 of the CZMA; and

13. expend funds in accordance with federal and state laws, the reserve management plan, and annual funding guidance from NOAA.

#### B. Federal Role in Reserve Management

NOAA's Office of Ocean and Coastal Resource Management shall:

1. administer the provisions of the Sections 315 and 312 of the CZMA to ensure that the reserve operates in accordance with goals of the reserve system and the ACE Basin NERR management plan;
2. review and process applications for financial assistance from the SCDNR consistent with 15 CFR 921, for management and operation, and as appropriate, land acquisition and facility construction;
3. advise SCDNR of existing and emerging national and regional issues that have bearing on the reserve and reserve system;
4. maintain an information exchange network among reserves, including available research and monitoring data and educational materials developed within the reserve system;
5. to the extent possible, facilitate NOAA resources and capabilities in support of reserve goals and programs.

#### C. General Provisions

1. Nothing in this agreement or subsequent financial assistance awards shall obligate either party in the expenditure of funds, or for future payments of money, in excess of appropriations authorized by law.
2. Upon termination of this agreement or any subsequent financial assistance awards to SCDNR any equipment purchased for studies to further this agreement will be disposed of in accordance with 15 CFR 24.32.
3. A free exchange of research and assessment data between the parties is encouraged and is necessary to ensure success of cooperative studies.

#### D. Other Provisions

1. Nothing in this agreement diminishes the independent authority or coordination responsibility of either party in administering its respective statutory obligations. Nothing in this agreement is intended to conflict with current written directives or policies of either party. If the terms of this agreement are inconsistent with existing written directives or policies of either party entering this agreement, then those portions of the agreement which are determined to be inconsistent with such written directives and

policies shall be invalid; but the remaining terms not affected by the inconsistency shall remain in full force and effect. At the first opportunity for revision of this agreement, all necessary changes shall be made by either an amendment to this agreement or by entering in a new superseding agreement, whichever is deemed expedient to the interested parties. Should disagreement arise on the interpretation of the provisions and/or amendments of this agreement that cannot be resolved by negotiations at the operating level of each party, the area(s) of disagreement shall be stated in writing by each party and promptly presented to a mutually approved mediator for non-binding mediation. If the parties cannot agree on the choice of a mediator or if the mediation does not resolve the dispute to the mutual approval of the parties, the parties are free to pursue any other legal remedies that are available.

#### ARTICLE II: REAL PROPERTY ACQUIRED FOR PURPOSE OF THE RESERVE

As well as acknowledging the rest of the requirements set forth at 15 CFR 921, ACE Basin NERR specifically acknowledges and will fully comply with conditions set forth at 15 CFR 921.21 (e), which specify the legal documentation requirements concerning the use and disposition of real property acquired for reserve purposes with federal funds under Section 315 of the CZMA.

#### ARTICLE III: PROGRAM EVALUATION

The NOAA Office of Ocean and Coastal Resource Management will schedule periodic evaluations of SCDNR's performance in meeting the terms of this agreement, financial assistance awards, and the reserve management plan. Where findings of deficiency occur, NOAA may initiate action in accordance with the designation withdrawal or interim sanctions procedures established by the CZMA and applicable regulations at 15 CFR 921.40-41.


#### ARTICLE IV: EFFECTIVE DATE, REVIEW, AMENDMENT AND TERMINATION

- A. This agreement is effective on the date of the last signature on this agreement and shall be in effect until terminated by either party.
- B. The Parties will review this Agreement at least once every three years to determine whether it should be revised or terminated. The Agreement may only be amended by the mutual written consent of both parties.
- C. This agreement may be terminated by mutual consent of both parties, or by NOAA if NOAA withdraws designation of the reserve within the reserve system, pursuant to applicable provisions of the CZMA and its implementing regulations as described under 15 CFR 923 Subpart L, or if NOAA finds that SCDNR fails to comply with this MOA. The agreement may be terminated by SCDNR with or without cause. Should this agreement be terminated, reimbursement of unexpended funds from financial assistance awards shall be determined on a pro rata basis according to the amount of work done by the parties at the time of termination. Additionally, reimbursement for land purchased and facilities constructed with

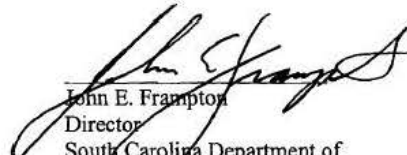
NOAA funds shall be consistent with terms and special award conditions of financial assistance awards.

- D. If any clause, sentence or other portion of this MOA shall become illegal, null or void for any reason, the remaining portions of this MOA shall remain in full force and effect.
- E. No waiver of right by either party of any provision of this MOA shall be binding unless expressly confirmed in writing by the party giving the waiver.

IN WITNESS THEREOF, the parties have caused this agreement to be executed.

  
Donna Wieting  
Acting Director  
Office of Ocean and Coastal  
Resource Management  
National Ocean Service  
National Oceanic and  
Atmospheric Administration  
U.S. Department of Commerce

OCT -6 2010  
\_\_\_\_\_  
Date

  
John E. Frampton  
Director  
South Carolina Department of  
Natural Resources

10-22-10  
\_\_\_\_\_  
Date

MOU between SCDNR and SCPRT

9/9/2008 @ 2:09 pm

**MEMORANDUM OF UNDERSTANDING  
BETWEEN  
SOUTH CAROLINA  
DEPARTMENT OF NATURAL RESOURCES  
AND  
DEPARTMENT OF PARKS, RECREATION AND TOURISM**

**I. Purpose**

This Memorandum of Understanding (MOU) between the South Carolina Departments of Natural Resources (DNR) and Parks, Recreation and Tourism (PRT) provides a framework for cooperation to aid, promote and manage interpretive, historical, scientific, educational and recreational activities in the ACE Basin National Estuarine Research Reserve (NERR). Their programs located at the NERR and Edisto Beach State Park are complementary and through increased cooperation the ability of these two agencies to increase the understanding, appreciation, and stewardship of estuaries, coastal habitats, and associated watersheds is strengthened.

**II. References and Authority**

**A. The ACE Basin National Estuarine Research Reserve (NERR)**

The South Carolina Coastal Management Act (ACT 123) was passed by the 1977 General Assembly of South Carolina to provide for the protection and enhancement of the State's coastal resources. This legislation created the South Carolina Coastal Council which was given the task of "promoting the economic and social welfare of the citizens of this State while protecting the sensitive and fragile areas in the coastal counties and promoting sound development of coastal resources." With this mandate, the State qualified as a participant in the National Coastal Zone Management Act of 1972. Section 315 of this Act authorized the establishment of "estuarine sanctuaries" to serve as field laboratories for the conduct of research and education related to enhancing coastal management. In 1985, the Congress amended the CZMA, changing the name of the program to the National Estuarine Research Reserve System (NERRS).

As of July 1, 1997, 22 reserves have been designated nationally, placing nearly 425,000 acres of estuarine waters, wetlands, and uplands into active management and stewardship. The ACE Basin NERR, designated in 1992, promotes informed management of the State's estuarine and coastal habitats through linked programs of stewardship, public education, and scientific understanding. The National Oceanic and Atmospheric Administration (NOAA) provides base funding for the program, while the Marine Resources Division of DNR provides on-site management for the NERR. The State has also made a long-term commitment of resources (both financial and land) to the program.

**B. Edisto Beach State Park**

The enabling legislation of the South Carolina Department of Parks, Recreation and Tourism specifies that the Agency "promote the general health and welfare of the people of the State by developing and expanding new and existing recreational areas, including the existing State Park System (51-1-60; 1967). Edisto Beach State Park was one of the earliest parks in the State Park System, established by the Civilian Conservation Corps in 1935. The system has since grown

to include 48 operational parks and offer a spectrum of recreational opportunities. Explicit to the State Park Service mission today is the provision of "natural resource-based recreational opportunities with emphasis on conservation, education and interpretation, of the natural, cultural and historical resources of the state".

Interpretation has been an important part of the State Park Service since 1968. More than 500,000 visitors participate in a state park educational program each year. This represents 5% of the total visitation to parks. The agency is committed to increasing the percentage of visitors who receive some type of interpretation, thus increasing the public's appreciation and understanding of the environment and the natural and cultural heritage of South Carolina. Interpretation plays a major role in the agency's goal of improving public stewardship of the environment. The development of an interpretation center at Edisto Beach State Park is consistent with the Strategic Management Plan (1997), which has been endorsed by the Governor of South Carolina.

### **III. Goals and Objectives**

It is the desire of both parties to cooperate fully and work toward the following common goals and objectives:

**A. Develop and enhance education/interpretive programs that will further the goals of both agencies in creating a better understanding and appreciation of SC's coastal and marine/estuarine resources. Particular emphasis will be placed on the ACE Basin NERR and Edisto Beach State Park.**

1. Provide on-site and outreach educational experiences, including special events, programs, and materials, and manage recreational experiences;
2. Educate about coastlines and estuaries, including ecological, cultural, historical, sociological, aesthetic, and economic perspectives;
3. Promote a sense of stewardship and individual responsibility for SC's coastal lands and wetlands, especially those of the ACE Basin NERR.

**B. Develop, design and build a "Coastal Learning Center" (Center) specializing in marine/estuarine and coastal education/interpretation. This Center will be located at Live Oak Landing at Edisto Beach State Park on Edisto Island.**

1. Design a state-of-the-art center which will provide a rich and engaging atmosphere for learning about and exploring a broad range of coastal and marine/estuarine issues. Using interactive experiences, the Center will promote continuing learning and encourage active involvement in stewardship programs;
2. The Center will geographically focus on the ACE Basin and other SC coastal areas. Specific examples of the ACE Basin marine/estuarine resources will be exhibited with linkages between research/monitoring activities and education, geology, history and wildlife.

**C. Promote partnerships, leverage funds and resources, and coordinate with federal, other state and local agencies, and private organizations.**

1. Enhancement of funding for marine education/interpretive programs, including the merchandising of materials which promote the conservation of marine/estuarine and coastal resources;
2. Build strong partnerships with the volunteer community and foster positive public visibility through effective use of volunteers;
3. Design and implement a fund raising campaign aimed at private corporate investments and/or philanthropy.

Now, Therefore, in consideration of the above premises, the parties agree as follows:

**IV. The DNR Shall:**

- A.** Work in concert with PRT to build an education/interpretive facility (Center) at Edisto Beach State Park. The DNR in partnership with PRT will seek funding opportunities for planning, designing, construction, equipping, operating, and staffing the proposed Center;
- B.** Jointly fund with PRT a full-time staff position to be located on-site at the proposed Center and dedicated to the Center's education/interpretive program and provide a critical link between complementary goals and objectives of the two agencies;
- C.** Schedule departures for the cruise program "A Coastal Adventure", which normally takes place out of Bennett's Point on the R/V Anita, from the proposed Center;
- D.** Share administrative and operations costs in a manner consistent with the operating policies of the Center and take full financial and administrative responsibility for its own employees physically located in or holding positions in the Center.
- E.** Take full financial responsibility for all damage claims which may arise from the negligence or intentional acts or omissions of its employees.
- F.** Comply with all State procurement policies, regulations and laws in the administration and operation of the Center, including all grants, contracts, and agreements.
- G.** Collaborate, to the extent practical, and jointly release statements to the press, and facilitate access to the Center resources.
- H.** Enter into specific cooperative agreements, contracts, or other agreements with PRT to accomplish the agreed upon work projects which may be developed supplementally to this Memorandum.

**V. The PRT Shall:**

- A.** Work in concert with DNR to develop strategies for establishing an interpretive facility (Center) at Edisto Beach State Park. The PRT in partnership with DNR will seek funding opportunities for planning, designing, construction, equipping, maintaining and staffing the proposed center. The center will be designed in accordance to established criteria for sustainable design.
- B.** Share administrative and operations costs in a manner consistent with the operating policies of the Center and take full financial and administrative responsibility for its own employees physically located in or holding positions in the Center.
- C.** Take full financial responsibility for all damage claims which may arise from the negligence or intentional acts or omissions of its employees.
- D.** Comply with all State procurement policies, regulations and laws in the administration and operation of the Center, including all grants, contracts, and agreements.
- E.** Collaborate, to the extent practical, and jointly release statements to the press, and endeavor to facilitate their access to the Center resources.
- F.** Work together with the DNR to coordinate market research designed to identify the expected level of visitation; demographics affecting visitation; anticipated costs for programs and operations; techniques that could be employed to make the Center partially or fully self-supporting; income that could be anticipated from these techniques; and other sources of funding for programs and/or operations.
- G.** Provide an appropriate location to establish the Center, which minimizes environmental impact and disturbance of archaeological sites. PRT shall be responsible for site investigation, including environmental and archaeological assessments of the site.
- H.** Collaborate with DNR in developing and managing a design concept.
- I.** Supervise the construction of the center within budget constraints, design specifications and time lines. PRT will take full responsibility for necessary permitting.
- J.** Maintain insurance coverage for both hazard and liability for the Center and its operation.
- K.** Collaborate with the DNR to develop and establish a landscape plan for the area surrounding the center.
- L.** Fund a full-time staff position to be located on-site at the proposed Center and dedicated to the Center's education/interpretive program which shall be shaped by the complementary goals and objectives of the two agencies.



**M.** Take responsibility for the development of an exhibit plan for the Center and an interpretive trail prospectus, focusing on interpretation of the coastal, marine and estuarine ecosystems. The plan shall be produced with input from the DNR and will be presented to the DNR for evaluation.

**N.** Work with the DNR to develop and implement an interpretive program at the Center. This program will focus on on-site educational experiences, but should include an outreach program within the ACE Basin project area.

**O.** Collaborate, to the extent practical, in the interpretive evaluation process and training workshops for the coastal parks within the South Carolina State Park Service.

**P.** PRT in partnership with the DNR will establish a media strategy for the Center and coordinate the promotion of the Center.

**Q.** Together with the DNR, develop and fund a volunteer program designed to improve operational effectiveness, foster public support, and promote opportunities for personal stewardship and advocacy.

**R.** Enter into specific cooperative agreements, contracts, or other agreements with DNR to accomplish the agreed upon work projects which may be developed supplementary to this memorandum.

**VI. Business Plan**

As set forth in Section V (F) of this MOU, PRT and DNR will develop a business plan to include, but not be limited to the following: market analysis, marketing strategy, sales strategy, strategic alliances, and financial plan. A strategy for implementation and project milestones will also be in this plan.

**VII. Financial Commitments**

No financial commitment on the part of either party is required by this MOU. Financial arrangements in furtherance of this MOU will be contingent upon the appropriation of necessary funds by the Congress of the United States, the South Carolina State Legislature, the award of contracts, grants, cooperative agreements, and donations of private funds.

**VIII. Duration**

The terms of this agreement will become effective upon the signature of each approving official of the respective parties entering this agreement and will remain in effect until terminated by mutual written agreement. This agreement may be modified upon written approval of each party.

**IX. Other Provisions**

Nothing in this MOU diminishes the independent authority or coordination responsibility of each agency in administering its statutory obligations. Nothing herein is intended to conflict with current DNR or PRT directives. If the terms of this agreement are inconsistent with existing directives of either of the agencies entering into this agreement, then those portions of this agreement which are determined to be inconsistent shall be invalid; but the remaining terms and conditions not affected by any inconsistency shall remain in full force and effect. At the first opportunity for review of the agreement, such changes deemed necessary will be accomplished by either an amendment to this agreement, or by entering into a new agreement, whichever is deemed expedient to the interest of both parties.

### **MATRIX OF RESPONSIBILITIES**

Key: Responsible (100%) Coordinate (75%) Share (50%) Assist (25%) No Involvement (0%)

<b>DUTIES</b>	<b>DNR</b>	<b>PRT</b>
Site Evaluation	Share	Share
Site Investigation	Assist	Coordinate
Environmental Impact Statement	Assist	Coordinate
Archaeological Assessment	No Involvement	Responsible
Fundraising	Share	Share
Costs	Share	Share
Design Specifications	Assist	Coordinate
Construction Supervision	No Involvement	Responsible
Landscaping	Share	Share
Interpretive Trail Design	Assist	Coordinate
Dock Permitting	Coordinate	Assist
Cruise Program	Coordinate	Assist
Research/Policy Workshops	Coordinate	Assist
Coordination of Access to ACE Basin Properties	Coordinate	Assist
On-site General Public Interpretive Program	Share	Share
Development and Implementation of Outreach Program	Share	Share
Development and Conduct of Certified Teacher Workshops	Share	Share
Elementary School Program	Assist	Coordinate
High School Program	Coordinate	Assist
Development of Education Materials	Share	Share
Exhibit Design	Assist	Coordinate
Media Strategy	Share	Share
Overall Promotion/Publicity	Share	Share
Daily Promotion	Assist	Coordinate
Press Releases	Share	Share
Maintenance of Facility	Assist	Coordinate
Evaluation of On-Site Interpretive Program	Assist	Coordinate
Development of staff training & public workshops	Share	Share
Development & Administration of Volunteers	Share	Share

**Certification of Consistency**



C. Earl Hunter, Commissioner

*Promoting and protecting the health of the public and the environment.*

February 22, 2011

Mr. Phil Maier  
ACE Basin Research Reserve Manager  
P. O. Box 12559  
Charleston, SC 29412

Re: ACE Basin NERR Management Plan

Dear Mr. Maier,

Staff have reviewed the draft 2011 – 2016 Management Plan for Ashepoo-Combahee-Edisto (ACE) Basin National Estuarine Research Reserve (NERR) and find it consistent with the management goals and objectives of the South Carolina Coastal Zone Management Program (CZMP).

In referring to the CZMP for consistency, SCDHEC-OCRM staff has determined that the ACE Basin Management Plan emphasizes the preservation, restoration and enhancement of coastal resources for their conservational, recreational, ecological, and research values. Examples of the implementation of these values include (as identified in the CZMP): the protection of valuable, unique or endangered marine life; the protection of geologic and oceanographic features; the enhancement of public and other preserved areas; assistance with the survival and preservation of the nation's fisheries and other ocean resources; and the advancement and promotion of research-based actions, which leads to a more thorough understanding of the marine ecosystem and the impact of human activities.

Furthermore, the continued and enhanced interaction between the Advisory Panel on specific issues, for example sea level rise, habitat loss, coastal training initiatives, and conservation efforts (Coastal and Estuarine Land Conservation Program - CELCP), will lead to better utilization of each program's strengths relative to our resource management responsibilities. These interactions are captured in the MOA and letter of support dated November 4, 2010.

Thank you again for the opportunity to review the management plan. Do not hesitate to contact our NERR State CZ Coordinator, Curtis Joyner, at 843-953-0205 or [joynercm@dhec.sc.gov](mailto:joynercm@dhec.sc.gov) should you have any questions.

Sincerely,

Carolyn Boltin-Kelly  
Deputy Commissioner

Cc: Braxton Davis, Director Policy and Planning Division  
Curtis Joyner, NERR State CZ Coordinator

## **Public Comments on Management Plan**

### **Comments**

The ACE Basin NERR Management Plan was developed with extensive input from the primary management partners, program partners within the ACE Basin, and the ACE Basin NERR Advisory Committee. The ACE Basin NERR Advisory Committee is particularly noteworthy for representing a wide array of our local and regional constituents. The legal notice of availability for the 30-day public comment period was published in the Federal Register on March 24, 2011, and the draft of the Management Plan was made available on the ACE Basin NERR website. One letter commenting on the plan was received. It is pasted below.

**Comments on the Ashepoo-Combahee-Edisto (ACE) Basin National  
Estuarine Research Reserve Management Plan 2011-2016**

1. Overall Plan: We fully support the Ashepoo-Combahee-Edisto (ACE) Basin National Estuarine Research Reserve Management Plan (Plan) 2011-2016 as it is written.
2. Botany Bay is mentioned in the Plan on pages 43, 67, 68, 69, 70 and 78. Beginning on page 43 with the "Formalizing the placement of the Botany Bay Plantation Wildlife Management Area/Heritage Preserve in the ACE Basin NEER through noncontiguous expansion of the boundary."
3. We believe the management plan is an excellent framework and should be the driver for the activities for the reserve.
4. Plans asking for public comment need to be posted, if possible, at Kiosks within affected properties.

We do have concerns about the activities currently happening in Botany Bay.

- We fully support Botany Bay being a part of the ACE Basin NERR. It is a fabulous, unique resource.
- High number of visitors - over 47,390 visited Botany Bay in 2010, within its 4,687 managed acres.
- Staffed solely with over 100 active volunteers who educate, patrol, handle check-in, provide information, and notify visitors of regulations. They also assist in maintaining roads, wildlife habitat, and trails.
- Staff 4 hour shifts sunrise to sunset
- Botany Bay may have over 1000 visitors on a busy weekend with no public facilities (restrooms, water, paved roads, or trash removal)
- Visitors include horses, hunters, fisherman, photographers, researchers, bikers, hikers, kayakers, persons with special needs, wildlife enthusiasts, youth, and the general public.
- Visitors include local, national and international persons as a result of being a unique resource.
- Botany Bay includes an estuary, beach, historic preserve, sensitive marine and wildlife habitat and nesting areas.
- Due to the high visitor count, lack of paid staff to monitor and enforce existing rules, there are growing concerns for the impacts to wildlife, removal of



shells/artifacts from the beach, artifacts from the historic areas and illegal fishing and hunting.

**We request an addition to the ACE Basin NERR Management plan that includes the development of a plan specifically for Botany Bay that addresses the challenges of balancing the mission of the reserve (managing for wildlife) and the growing negative impacts of visitors.**

**Signatures:**

**Scott D. Moore, Ann Truesdale, Sophia McAllister, Janette Jackson, Bruce W. Krucke, Ralph Melbourne, Sarah Giles, Susan Zoltewicz, Bob & Angelle Beaty, Dixie Songer, Mary G. Frye, Maxine Campbell, Bill Johnston, Kelley McCormick, Paul Cooler, Denise DuPon, Mark and Sarajune Owen, Shirley and Tom Mason, Emily Craig, Sidney A. Gauthreaux, Jr., Carroll Belser.**

*Reserve Response*

Moore et al "fully support" the ACE Basin NERR management plan as written, noting that is an "excellent framework" for focusing activities of the Reserve. Moreover, they support expansion of the ACE Basin NERR boundary in a non-contiguous fashion to include the Botany Bay Plantation property, which appears to be the focus of their interest.

Moore et al. express concern about potential impacts to resources on Botany Bay Plantation due to high numbers of visitors. While the Reserve managed properties do not presently experience routine high levels of visitor use, staff recognized the potential for impacts to managed resources if use increases in the future. As a result we have been taking steps to indentify the nature of the impacts and strategies to mitigate them while continuing to provide access to a high-quality natural resource-based experience. Specific actions have included 1) developing the ACE Basin Experience brochure and display which helps visitors extend their experience in the ACE Basin by visiting partners that manage lands for the primary purpose of human recreation, 2) development of a volunteer corps to help visitors become better stewards of our natural resources, 3) conducted pilot assessment of visitor impacts, 4) funded a graduate research fellowship to develop a model to improve understanding of impacts of visitors at Botany Bay Plantation. Finally, the Reserve has formally recognized the importance of managing visitor use by identifying it as one of four priority issues in the new ACE Basin NERR management plan. This step reflects our strong commitment to working on the issue over the next five years.

In moving forward to address human impacts on ACE Basin NERR managed lands the Reserve will work diligently to ensure that decisions are consistent with policies and regulations relating to all partners and programs including, but not limited to, the South Carolina Department of Natural Resources, National Estuarine Research Reserve System,

Heritage Trust Program and Wildlife Management Area program. This will require thoughtful consideration of local issues and concerns, overlapping management frameworks and requirements, and the broader impacts of proposed management prescriptions.

The South Carolina Department of Natural Resources requires the development of a separate management plan for each property. The plan for Botany Bay Plantation was provided to Mr. Moore subsequent to receiving his comments. The Reserve will continue to work with managers sharing responsibility for Botany Bay Plantation to modify and improve this plan as needed.



## **Code of Federal Regulations**

Code of Federal Regulations

**Title 15, Volume 3, Revised as of January 1, 2003 From the U.S. Government  
Printing Office via GPO Access [CITE: 15CFR921]**

TITLE 15--COMMERCE AND FOREIGN TRADE

CHAPTER IX--NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION,  
DEPARTMENT OF COMMERCE

PART 921--NATIONAL ESTUARINE RESEARCH RESERVE SYSTEM  
REGULATIONS

### **Subpart A--General**

921.1 Mission, goals and general provisions. 921.2 Definitions. 921.3 National Estuarine Research Reserve System Biogeographic Classification Scheme and Estuarine Typologies. 921.4 Relationship to other provisions of the Coastal Zone Management Act and the Marine Protection, Research and Sanctuaries Act.

### **Subpart B--Site Selection, Post Site Selection and Management Plan Development**

921.10 General. 921.11 Site selection and feasibility. 921.12 Post site selection. 921.13 Management plan and environmental impact statement development.

### **Subpart C--Acquisition, Development and Preparation of the Final Management Plan**

921.20 General. 921.21 Initial acquisition and development awards.

### **Subpart D--Reserve Designation and Subsequent Operation**

921.30 Designation of National Estuarine Research Reserves. 921.31 Supplemental acquisition and development awards. 921.32 Operation and management: Implementation of the management plan. 921.33 Boundary changes, amendments to the management plan, and addition of multiple-site components.

### **Subpart E--Ongoing Oversight, Performance Evaluation and Withdrawal of Designation**

921.40 Ongoing oversight and evaluations of designated National Estuarine Research Reserves.

### **Subpart F--Special Research Projects**

921.41 Withdrawal of designation. 921.50 General. 921.51 Estuarine research guidelines. 921.52 Promotion and coordination of estuarine research.

### **Subpart G--Special Monitoring Projects**

921.60 General.

### **Subpart H--Special Interpretation and Education Projects**

921.70 General.

### **Subpart I--General Financial Assistance Provisions**

921.80 Application information. 921.81 Allowable costs. 921.82 Amendments to financial assistance awards.

Appendix I to Part 921--Biogeographic Classification Scheme Appendix II to Part 921--Typology of National Estuarine Research Reserves

Authority: Section 315 of the Coastal Zone Management Act, as amended (16 U.S.C. 1461). *Source: 58 FR 38215, July 15, 1993, unless otherwise noted.*

### **Sec. 921.1 Mission, goals and general provisions.**

(a) The mission of the National Estuarine Research Reserve Program is the establishment and management, through Federal-state cooperation, of a national system (National Estuarine Research Reserve System or System) of estuarine research reserves (National

Estuarine Research Reserves or Reserves) representative of the various regions and estuarine types in the United States. National Estuarine Research Reserves are established to provide opportunities for long-term research, education, and interpretation.

(b) The goals of the Program are to:

1. Ensure a stable environment for research through long-term protection of National Estuarine Research Reserve resources;
2. Address coastal management issues identified as significant through coordinated estuarine research within the System;
3. Enhance public awareness and understanding of estuarine areas and provide suitable opportunities for public education and interpretation;
4. Promote Federal, state, public and private use of one or more Reserves within the System when such entities conduct estuarine research; and
5. Conduct and coordinate estuarine research within the System, gathering and making available information necessary for improved understanding and management of estuarine areas.

(c) National Estuarine Research Reserves shall be open to the public to the extent permitted under state and Federal law. Multiple uses are allowed to the degree compatible with each Reserve's overall purpose as provided in the management plan (see Sec. 921.13) and consistent with paragraphs (a) and (b) of this section. Use levels are set by the state where the Reserve is located and analyzed in the management plan. The Reserve management plan shall describe the uses and establish priorities among these uses. The plan shall identify uses requiring a state permit, as well as areas where uses are encouraged or prohibited. Consistent with resource protection and research objectives, public access and use may be restricted to certain areas or components within a Reserve.

(d) Habitat manipulation for research purposes is allowed consistent with the following limitations. Manipulative research activities must be specified in the management plan, be consistent with the mission and goals of the program (see paragraphs (a) and (b) of this section) and the goals and objectives set forth in the Reserve's management plan, and be limited in nature and extent to the minimum manipulative activity necessary to accomplish the stated research objective. Manipulative research activities with a significant or long-term impact on Reserve resources require the prior approval of the state and the National Oceanic and Atmospheric Administration (NOAA). Manipulative research activities which can reasonably be expected to have a significant adverse impact on the estuarine resources and habitat of a Reserve, such that the activities themselves or their resulting short- and long-term consequences compromise the representative character and integrity of a Reserve, are prohibited. Habitat manipulation for resource management purposes is prohibited except as specifically approved by NOAA as: (1) A restoration activity consistent with paragraph (e) of this section; or (2) an activity necessary for the protection of public health or the preservation of other sensitive resources which have been listed or are eligible for protection under relevant Federal or state authority (e.g., threatened/endangered species or significant historical or cultural resources) or if the manipulative activity is a long-term pre-existing use (i.e., has occurred prior to designation) occurring in a buffer area. If habitat manipulation is determined to be necessary for the protection of public health, the preservation of sensitive resources, or if the manipulation is a long-term pre-existing use in a buffer area, then these activities shall be specified in the Reserve management plan in accordance

with Sec. 921.13(a)(10) and shall be limited to the reasonable alternative which has the least adverse and shortest term impact on the representative and ecological integrity of the Reserve.

(e) Under the Act an area may be designated as an estuarine Reserve only if the area is a representative estuarine ecosystem that is suitable for long-term research. Many estuarine areas have undergone some ecological change as a result of human activities (e.g., hydrological changes, intentional/unintentional species composition changes--introduced and exotic species). In those areas proposed or designated as National Estuarine Research Reserves, such changes may have diminished the representative character and integrity of the site. Although restoration of degraded areas is not a primary purpose of the System, such activities may be permitted to improve the representative character and integrity of a Reserve. Restoration activities must be carefully planned and approved by NOAA through the Reserve management plan. Historical research may be necessary to determine the "natural" representative state of an estuarine area (i.e., an estuarine ecosystem minimally affected by human activity or influence). Frequently, restoration of a degraded estuarine area will provide an excellent opportunity for management oriented research.

(f) NOAA may provide financial assistance to coastal states, not to exceed, per Reserve, 50 percent of all actual costs or \$5 million whichever amount is less, to assist in the acquisition of land and waters, or interests therein. NOAA may provide financial assistance to coastal states not to exceed 70 percent of all actual costs for the management and operation of, the development and construction of facilities, and the conduct of educational or interpretive activities concerning Reserves (see subpart I). NOAA may provide financial assistance to any coastal state or public or private person, not to exceed 70 percent of all actual costs, to support research and monitoring within a Reserve. Notwithstanding any financial assistance limits established by this Part, when financial assistance is provided from amounts recovered as a result of damage to natural resources located in the coastal zone, such assistance may be used to pay 100 percent of all actual costs of activities carried out with this assistance, as long as such funds are available. Predesignation, acquisition and development, operation and management, special research and monitoring, and special education and interpretation awards are available under the National Estuarine Reserve Program. Predesignation awards are for site selection/feasibility, draft management plan preparation and conduct of basic characterization studies. Acquisition and development awards are intended primarily for acquisition of interests in land, facility construction and to develop and/or upgrade research, monitoring and education programs. Operation and management awards provide funds to assist in implementing, operating and managing the administrative, and basic research, monitoring and education programs, outlined in the Reserve management plan. Special research and monitoring awards provide funds to conduct estuarine research and monitoring projects with the System. Special educational and interpretive awards provide funds to conduct estuarine educational and interpretive projects within the System.

(g) Lands already in protected status managed by other Federal agencies, state or local governments, or private organizations may be included within National Estuarine Research Reserves only if the managing entity commits to long-term management consistent with paragraphs (d) and (e) of this section in the Reserve management plan. Federal lands already in protected status may not comprise a majority of the key land and

water areas of a Reserve (see Sec. 921.11(c)(3)).

(h) To assist the states in carrying out the Program's goals in an effective manner, NOAA will coordinate a research and education information exchange throughout the National Estuarine Research Reserve System. As part of this role, NOAA will ensure that information and ideas from one Reserve are made available to others in the System. The network will enable Reserves to exchange information and research data with each other, with universities engaged in estuarine research, and with Federal, state, and local agencies. NOAA's objective is a system- wide program of research and monitoring capable of addressing the management issues that affect long-term productivity of our Nation's estuaries.

*[58 FR 38215, July 15, 1993, as amended at 62 FR 12540, Mar. 17, 1997; 63 FR 26717, May 14, 1998].*

### **Sec. 921.2 Definitions**

(a) Act means the Coastal Zone Management Act of 1972, as amended, 16 U.S.C. 1451 et seq.

(b) Assistant Administrator means the Assistant Administrator for Ocean Services and Coastal Zone Management or delegee.

(c) Coastal state means a state of the United States, in or bordering on, the Atlantic, Pacific, or Arctic Ocean, the Gulf of Mexico, Long Island Sound, or one or more of the Great Lakes. For the purposes of these regulations the term also includes Puerto Rico, the Virgin Islands, Guam, the Commonwealth of the Northern Marianas Islands, the Trust Territories of the Pacific Islands, and American Samoa (see 16 U.S.C. 1453(4)).

(d) State agency means an instrumentality of a coastal state to whom the coastal state has delegated the authority and responsibility for the creation and/or management/operation of a National Estuarine Research Reserve. Factors indicative of this authority may include the power to receive and expend funds on behalf of the Reserve, acquire and sell or convey real and personal property interests, adopt rules for the protection of the Reserve, enforce rules applicable to the Reserve, or develop and implement research and education programs for the reserve. For the purposes of these regulations, the terms ``coastal state" and ``State agency" shall be synonymous.

(e) Estuary means that part of a river or stream or other body of water having unimpaired connection with the open sea, where the sea water is measurably diluted with fresh water derived from land drainage. The term also includes estuary-type areas with measurable freshwater influence and having unimpaired connections with the open sea, and estuary-type areas of the Great Lakes and their connecting waters (see 16 U.S.C. 1453(7)).

(f) National Estuarine Research Reserve means an area that is a representative estuarine ecosystem suitable for long-term research, which may include all of the key land and water portion of an estuary, and adjacent transitional areas and uplands constituting to the extent feasible a natural unit, and which is set aside as a natural field laboratory to provide long-term opportunities for research, education, and interpretation on the ecological relationships within the area (see 16 U.S.C. 1453(8)) and meets the requirements of 16 U.S.C. 1461(b). This includes those areas designated as National Estuarine Sanctuaries or Reserves under section 315 of the Act prior to enactment of the Coastal Zone Act Reauthorization Amendments of 1990 and each area subsequently designated as a National Estuarine Research Reserve.

### **Sec. 921.3 National Estuarine Research Reserve System Biogeographic**

**Classification Scheme and Estuarine Typologies.**

(a) National Estuarine Research Reserves are chosen to reflect regional differences and to include a variety of ecosystem types. A biogeographic classification scheme based on regional variations in the nation's coastal zone has been developed. The biogeographic classification scheme is used to ensure that the National Estuarine Research Reserve System includes at least one site from each region. The estuarine typology system is utilized to ensure that sites in the System reflect the wide range of estuarine types within the United States.

(b) The biogeographic classification scheme, presented in appendix I, contains 29 regions. Figure 1 graphically depicts the biogeographic regions of the United States.

(c) The typology system is presented in appendix II..

**Sec. 921.4 Relationship to other provisions of the Coastal Zone Management Act, and to the Marine Protection, Research and Sanctuaries Act.**

(a) The National Estuarine Research Reserve System is intended to provide information to state agencies and other entities involved in addressing coastal management issues. Any coastal state, including those that do not have approved coastal management programs under section 306 of the Act, is eligible for an award under the National Estuarine Research Reserve Program (see Sec. 921.2(c)).

(b) For purposes of consistency review by states with a federally approved coastal management program, the designation of a National Estuarine Research Reserve is deemed to be a Federal activity, which, if directly affecting the state's coastal zone, must be undertaken in a manner consistent to the maximum extent practicable with the approved state coastal management program as provided by section 1456(c)(1) of the Act, and implementing regulations at 15 CFR part 930, subpart C. In accordance with section 1456(c)(1) of the Act and the applicable regulations NOAA will be responsible for certifying that designation of the Reserve is consistent with the state's approved coastal management program. The state must concur with or object to the certification. It is recommended that the lead state agency for Reserve designation consult, at the earliest practicable time, with the appropriate state officials concerning the consistency of a proposed National Estuarine Research Reserve.

(c) The National Estuarine Research Reserve Program will be administered in close coordination with the National Marine Sanctuary Program (Title III of the Marine Protection, Research and Sanctuaries Act, as amended, 16 U.S.C. 1431-1445), also administered by NOAA. Title III authorizes the Secretary of Commerce to designate discrete areas of the marine environment as National Marine Sanctuaries to protect or restore such areas for their conservation, recreational, ecological, historical, research, educational or esthetic values. National Marine Sanctuaries and Estuarine Research Reserves may not overlap, but may be adjacent.

**Sec. 921.10 General.**

(a) A coastal state may apply for Federal financial assistance for the purpose of site selection, preparation of documents specified in Sec. 921.13 (draft management plan (DMP) and environmental impact statement (EIS)), and the conduct of limited basic characterization studies. The total Federal share of this assistance may not exceed \$100,000. Federal financial assistance for preacquisition activities under Sec. 921.11 and Sec. 921.12 is subject to the total \$5 million for which each Reserve is eligible for land acquisition. Notwithstanding the above, when financial assistance is provided from

amounts recovered as a result of damage to natural resources located in the coastal zone, such assistance may be used to pay 100 percent of all actual costs of activities carried out with this assistance, as long as such funds are available. In the case of a biogeographic region (see appendix I) shared by two or more coastal states, each state is eligible for Federal financial assistance to establish a separate National Estuarine Research Reserve within their respective portion of the shared biogeographic region. Each separate National Estuarine Research Reserve is eligible for the full complement of funding. Financial assistance application procedures are specified in subpart I.

(b) In developing a Reserve program, a state may choose to develop a multiple-site Reserve reflecting a diversity of habitats in a single biogeographic region. A multiple-site Reserve allows the state to develop complementary research and educational programs within the individual components of its multi-site Reserve. Multiple-site Reserves are treated as one Reserve in terms of financial assistance and development of an overall management framework and plan. Each individual site of a proposed multiple-site Reserve shall be evaluated both separately under Sec. 921.11(c) and collectively as part of the site selection process. A coastal state may propose to establish a multiple-site Reserve at the time of the initial site selection, or at any point in the development or operation of the Reserve. If the state decides to develop a multiple-site National Estuarine Research Reserve after the initial acquisition and development award is made for a single site, the proposal is subject to the requirements set forth in Sec. 921.33(b). However, a state may not propose to add one or more sites to an already designated Reserve if the operation and management of such Reserve has been found deficient and uncorrected or the research conducted is not consistent with the Estuarine Research Guidelines referenced in Sec. 921.51. In addition, Federal funds for the acquisition of a multiple-site Reserve remain limited to \$5,000,000 (see Sec. 921.20). The funding for operation of a multiple-site Reserve is limited to the maximum allowed for any one Reserve per year (see Sec. 921.32(c)) and preacquisition funds are limited to \$100,000 per Reserve. Notwithstanding the above, when financial assistance is provided from amounts recovered as a result of damage to natural resources located in the coastal zone, such assistance may be used to pay 100 percent of all actual costs of activities carried out with this assistance, as long as such funds are available.

*[58 FR 38215, July 15, 1993, as amended at 63 FR 26717, May 14, 1998].*

**Sec. 921.11 Site selection and feasibility.**

(a) A coastal state may use Federal funds to establish and implement a site selection process which is approved by NOAA.

(b) In addition to the requirements set forth in subpart I, a request for Federal funds for site selection must contain the following programmatic information:

1. A description of the proposed site selection process and how it will be implemented in conformance with the biogeographic classification scheme and typology (Sec. 921.3);
2. An identification of the site selection agency and the potential management agency; and
3. A description of how public participation will be incorporated into the process (see Sec. 921.11(d)).

(c) As part of the site selection process, the state and NOAA shall evaluate and select the final site(s). NOAA has final authority in approving such sites. Site selection shall be guided by the following principles:

1. The site's contribution to the biogeographical and typological balance of the National Estuarine Research Reserve System. NOAA will give priority consideration to proposals to establish Reserves in biogeographic regions or subregions or incorporating types that are not represented in the system. (see the biogeographic classification scheme and typology set forth in Sec. 921.3 and appendices I and II);
2. The site's ecological characteristics, including its biological productivity, diversity of flora and fauna, and capacity to attract a broad range of research and educational interests. The proposed site must be a representative estuarine ecosystem and should, to the maximum extent possible, be an estuarine ecosystem minimally affected by human activity or influence (see Sec. 921.1(e)).
3. Assurance that the site's boundaries encompass an adequate portion of the key land and water areas of the natural system to approximate an ecological unit and to ensure effective conservation. Boundary size will vary greatly depending on the nature of the ecosystem. Reserve boundaries must encompass the area within which adequate control has or will be established by the managing entity over human activities occurring within the Reserve. Generally, Reserve boundaries will encompass two areas: Key land and water areas (or "core area") and a buffer zone. Key land and water areas and a buffer zone will likely require significantly different levels of control (see Sec. 921.13(a)(7)). The term "key land and water areas" refers to that core area within the Reserve that is so vital to the functioning of the estuarine ecosystem that it must be under a level of control sufficient to ensure the long-term viability of the Reserve for research on natural processes. Key land and water areas, which comprise the core area, are those ecological units of a natural estuarine system which preserve, for research purposes, a full range of significant physical, chemical and biological factors contributing to the diversity of fauna, flora and natural processes occurring within the estuary. The determination of which land and water areas are "key" to a particular Reserve must be based on specific scientific knowledge of the area. A basic principle to follow when deciding upon key land and water areas is that they should encompass resources representative of the total ecosystem, and which if compromised could endanger the research objectives of the Reserve. The term buffer zone refers to an area adjacent to or surrounding key land and water areas and essential to their integrity. Buffer zones protect the core area and provide additional protection for estuarine-dependent species, including those that are rare or endangered. When determined appropriate by the state and approved by NOAA, the buffer zone may also include an area necessary for facilities required for research and interpretation. Additionally, buffer zones should be established sufficient to accommodate a shift of the core area as a result of biological, ecological or geomorphological change which reasonably could be expected to occur. National Estuarine Research Reserves may include existing Federal or state lands already in a protected status where mutual benefit can be enhanced. However, NOAA will not approve a site for potential National Estuarine Research Reserve status that is dependent primarily upon the inclusion of currently protected Federal lands in order to meet the requirements for Reserve status (such as key land and water areas). Such lands generally will be included within a Reserve to serve as a buffer or for other ancillary purposes; and may be included, subject to NOAA approval, as a limited portion of the core area;
4. The site's suitability for long-term estuarine research, including ecological factors

and proximity to existing research facilities and educational institutions;

5. The site's compatibility with existing and potential land and water uses in contiguous areas as well as approved coastal and estuarine management plans; and

6. The site's importance to education and interpretive efforts, consistent with the need for continued protection of the natural system.

(d) Early in the site selection process the state must seek the views of affected landowners, local governments, other state and Federal agencies and other parties who are interested in the area(s) being considered for selection as a potential National Estuarine Research Reserve. After the local government(s) and affected landowner(s) have been contacted, at least one public meeting shall be held in the vicinity of the proposed site. Notice of such a meeting, including the time, place, and relevant subject matter, shall be announced by the state through the area's principal newspaper at least 15 days prior to the date of the meeting and by NOAA in the Federal Register.

(e) A state request for NOAA approval of a proposed site (or sites in the case of a multi-site Reserve) must contain a description of the proposed site(s) in relationship to each of the site selection principals (Sec. 921.11(c)) and the following information:

1. An analysis of the proposed site(s) based on the biogeographical scheme/typology discussed in Sec. 921.3 and set forth in appendices I and II;

2. A description of the proposed site(s) and its (their) major resources, including location, proposed boundaries, and adjacent land uses. Maps are required;

3. A description of the public participation process used by the state to solicit the views of interested parties, a summary of comments, and, if interstate issues are involved, documentation that the Governor(s) of the other affected state(s) has been contacted. Copies of all correspondence, including contact letters to all affected landowners must be appended;

4. A list of all sites considered and a brief statement of the reasons why a site was not preferred; and

5. A nomination of the proposed site(s) for designation as a National Estuarine Research Reserve by the Governor of the coastal state in which the state is located.

(f) A state proposing to reactivate an inactive site, previously approved by NOAA for development as an Estuarine Sanctuary or Reserve, may apply for those funds remaining, if any, provided for site selection and feasibility (Sec. 921.11a) to determine the feasibility of reactivation. This feasibility study must comply with the requirements set forth in Sec. 921.11 (c) through (e).

#### **Sec. 921.12 Post site selection.**

(a) At the time of the coastal state's request for NOAA approval of a proposed site, the state may submit a request for funds to develop the draft management plan and for preparation of the EIS. At this time, the state may also submit a request for the remainder of the predesignation funds to perform a limited basic characterization of the physical, chemical and biological characteristics of the site approved by NOAA necessary for providing EIS information to NOAA. The state's request for these post site selection funds must be accompanied by the information specified in subpart I and, for draft management plan development and EIS information collection, the following programmatic information:

1. A draft management plan outline (see Sec. 921.13(a) below); and 2. An outline of a draft memorandum of understanding (MOU) between the state and NOAA detailing the



Federal-state role in Reserve management during the initial period of Federal funding and expressing the state's long-term commitment to operate and manage the Reserve.

(b) The state is eligible to use the funds referenced in Sec. 921.12(a) after the proposed site is approved by NOAA under the terms of Sec. 921.11.

**Sec. 921.13 Management plan and environmental impact statement development.**

(a) After NOAA approves the state's proposed site and application for funds submitted pursuant to Sec. 921.12, the state may begin draft management plan development and the collection of information necessary for the preparation by NOAA of an EIS. The state shall develop a draft management plan, including an MOU. The plan shall set out in detail:

1. Reserve goals and objectives, management issues, and strategies or actions for meeting the goals and objectives;
2. An administrative plan including staff roles in administration, research, education/interpretation, and surveillance and enforcement;
3. A research plan, including a monitoring design;
4. An education/interpretive plan;
5. A plan for public access to the Reserve; 6.

A construction plan, including a proposed construction schedule, general descriptions of proposed developments and general cost estimates. Information should be provided for proposed minor construction projects in sufficient detail to allow these projects to begin in the initial phase of acquisition and development. A categorical exclusion, environmental assessment, or EIS may be required prior to construction;

7. (i) An acquisition plan identifying the ecologically key land and water areas of the Reserve, ranking these areas according to their relative importance, and including a strategy for establishing adequate long-term state control over these areas sufficient to provide protection for Reserve resources to ensure a stable environment for research. This plan must include an identification of ownership within the proposed Reserve boundaries, including land already in the public domain; the method(s) of acquisition which the state proposes to use--acquisition (including less-than-fee simple options) to establish adequate long-term state control; an estimate of the fair market value of any property interest--which is proposed for acquisition; a schedule estimating the time required to complete the process of establishing adequate state control of the proposed research reserve; and a discussion of any anticipated problems. In selecting a preferred method(s) for establishing adequate state control over areas within the proposed boundaries of the Reserve, the state shall perform the following steps for each parcel determined to be part of the key land and water areas (control over which is necessary to protect the integrity of the Reserve for research purposes), and for those parcels required for research and interpretive support facilities or buffer purposes:

(A) Determine, with appropriate justification, the minimum level of control(s) required [e.g., management agreement, regulation, less-than-fee simple property interest (e.g., conservation easement), fee simple property acquisition, or a combination of these approaches]. This does not preclude the future necessity of increasing the level of state control;

(B) Identify the level of existing state control(s); (C) Identify the level of additional state control(s), if any, necessary to meet the

minimum requirements identified in paragraph (a)(7)(i)(A) of this section; (D) Examine all reasonable alternatives for attaining the level of control identified in paragraph (a)(7)(i)(C) of this section, and perform a cost analysis of each; and (E) Rank, in order of cost, the methods (including acquisition) identified in paragraph (a)(7)(i)(D) of this section.

(ii) An assessment of the relative cost-effectiveness of control alternatives shall include a reasonable estimate of both short-term costs (e.g., acquisition of property interests, regulatory program development including associated enforcement costs, negotiation, adjudication, etc.) and long-term costs (e.g., monitoring, enforcement, adjudication, management and coordination). In selecting a preferred method(s) for establishing adequate state control over each parcel examined under the process described above, the state shall give priority consideration to the least costly method(s) of attaining the minimum level of long-term control required. Generally, with the possible exception of buffer areas required for support facilities, the level of control(s) required for buffer areas will be considerably less than that required for key land and water areas. This acquisition plan, after receiving the approval of NOAA, shall serve as a guide for negotiations with landowners. A final boundary for the reserve shall be delineated as a part of the final management plan;

8. A resource protection plan detailing applicable authorities, including allowable uses, uses requiring a permit and permit requirements, any restrictions on use of the research reserve, and a strategy for research reserve surveillance and enforcement of such use restrictions, including appropriate government enforcement agencies;

9. If applicable, a restoration plan describing those portions of the site that may require habitat modification to restore natural conditions;

10. If applicable, a resource manipulation plan, describing those portions of the Reserve buffer in which long-term pre-existing (prior to designation) manipulation for reasons not related to research or restoration is occurring. The plan shall explain in detail the nature of such activities, shall justify why such manipulation should be permitted to continue within the reserve buffer; and shall describe possible effects of this manipulation on key land and water areas and their resources;

11. A proposed memorandum of understanding (MOU) between the state and NOAA regarding the Federal-state relationship during the establishment and development of the National Estuarine Research Reserve, and expressing a long-term commitment by the state to maintain and manage the Reserve in accordance with section 315 of the Act, 16 U.S.C. 1461, and applicable regulations. In conjunction with the MOU, and where possible under state law, the state will consider taking appropriate administrative or legislative action to ensure the long-term protection and operation of the National Estuarine Research Reserve. If other MOUs are necessary (such as with a Federal agency, another state agency or private organization), drafts of such MOUs must be included in the plan. All necessary MOU's shall be signed prior to Reserve designation; and

12. If the state has a federally approved coastal management program, a certification that the National Estuarine Research Reserve is consistent to the maximum extent practicable with that program. See Secs. 921.4(b) and 921.30(b).

(b) Regarding the preparation of an EIS under the National Environmental Policy Act on a National Estuarine Research Reserve proposal, the state and NOAA shall collect all

necessary information concerning the socioeconomic and environmental impacts associated with implementing the draft management plan and feasible alternatives to the plan. Based on this information, the state will draft and provide NOAA with a preliminary EIS.

(c) Early in the development of the draft management plan and the draft EIS, the state and NOAA shall hold a scoping meeting (pursuant to NEPA) in the area or areas most affected to solicit public and government comments on the significant issues related to the proposed action. NOAA will publish a notice of the meeting in the Federal Register at least 15 days prior to the meeting. The state shall be responsible for publishing a similar notice in the local media.

(d) NOAA will publish a Federal Register notice of intent to prepare a draft EIS. After the draft EIS is prepared and filed with the Environmental Protection Agency (EPA), a Notice of Availability of the draft EIS will appear in the Federal Register. Not less than 30 days after publication of the notice, NOAA will hold at least one public hearing in the area or areas most affected by the proposed national estuarine research reserve. The hearing will be held no sooner than 15 days after appropriate notice of the meeting has been given in the principal news media by the state and in the Federal Register by NOAA. After a 45-day comment period, a final EIS will be prepared by the state and NOAA.

#### **Sec. 921.20 General.**

The acquisition and development period is separated into two major phases. After NOAA approval of the site, draft management plan and draft MOU, and completion of the final EIS, a coastal state is eligible for an initial acquisition and development award(s). In this initial phase, the state should work to meet the criteria required for formal research reserve designation; e.g., establishing adequate state control over the key land and water areas as specified in the draft management plan and preparing the final management plan. These requirements are specified in Sec. 921.30. Minor construction in accordance with the draft management plan may also be conducted during this initial phase. The initial acquisition and development phase is expected to last no longer than three years. If necessary, a longer time period may be negotiated between the state and NOAA. After Reserve designation, a state is eligible for a supplemental acquisition and development award(s) in accordance with Sec. 921.31. In this post-designation acquisition and development phase, funds may be used in accordance with the final management plan to construct research and educational facilities, complete any remaining land acquisition, for program development, and for restorative activities identified in the final management plan. In any case, the amount of Federal financial assistance provided to a coastal state with respect to the acquisition of lands and waters, or interests therein, for any one National Estuarine Research Reserve may not exceed an amount equal to 50 percent of the costs of the lands, waters, and interests therein or \$5,000,000, whichever amount is less, except when the financial assistance is provided from amounts recovered as a result of damage to natural resources located in the coastal zone, in which case the assistance may be used to pay 100 percent of all actual costs of activities carried out with this assistance, as long as such funds are available.

*[58 FR 38215, July 15, 1993, as amended at 62 FR 12540, Mar. 17, 1997; 63 FR 26717, May 14, 1998].*

#### **Sec. 921.21 Initial acquisition and development awards.**

- (a) Assistance is provided to aid the recipient prior to designation in:
1. Acquiring a fee simple or less-than-fee simple real property interest in land and water areas to be included in the Reserve boundaries (see Sec. 921.13(a)(7); Sec. 921.30(d));
  2. Minor construction, as provided in paragraphs (b) and (c) of this section; 3. Preparing the final management plan; and 4. Initial management costs, e.g., for implementing the NOAA approved draft management plan, hiring a Reserve manager and other staff as necessary and for other management-related activities. Application procedures are specified in subpart I.
- (b) The expenditure of Federal and state funds on major construction activities is not allowed during the initial acquisition and development phase. The preparation of architectural and engineering plans, including specifications, for any proposed construction, or for proposed restorative activities, is permitted. In addition, minor construction activities, consistent with paragraph (c) of this section also are allowed. The NOAA-approved draft management plan must, however, include a construction plan and a public access plan before any award funds can be spent on construction activities.
- (c) Only minor construction activities that aid in implementing portions of the management plan (such as boat ramps and nature trails) are permitted during the initial acquisition and development phase. No more than five (5) percent of the initial acquisition and development award may be expended on such activities. NOAA must make a specific determination, based on the final EIS, that the construction activity will not be detrimental to the environment.
- (d) Except as specifically provided in paragraphs (a) through (c) of this section, construction projects, to be funded in whole or in part under an acquisition and development award(s), may not be initiated until the Reserve receives formal designation (see Sec. 921.30). This requirement has been adopted to ensure that substantial progress in establishing adequate state control over key land and water areas has been made and that a final management plan is completed before major sums are spent on construction. Once substantial progress in establishing adequate state control/acquisition has been made, as defined by the state in the management plan, other activities guided by the final management plan may begin with NOAA's approval.
- (e) For any real property acquired in whole or part with Federal funds for the Reserve, the state shall execute suitable title documents to include substantially the following provisions, or otherwise append the following provisions in a manner acceptable under applicable state law to the official land record(s):
1. Title to the property conveyed by this deed shall vest in the [recipient of the award granted pursuant to section 315 of the Act, 16 U.S.C. 1461 or other NOAA approved state agency] subject to the condition that the designation of the [name of National Estuarine Reserve] is not withdrawn and the property remains part of the federally designated [name of National Estuarine Research Reserve]; and
  2. In the event that the property is no longer included as part of the Reserve, or if the designation of the Reserve of which it is part is withdrawn, then NOAA or its successor agency, after full and reasonable consultation with the State, may exercise the following rights regarding the disposition of the property:
    - (i) The recipient may retain title after paying the Federal Government an amount computed by applying the Federal percentage of participation in the cost of the original

project to the current fair market value of the property; (ii) If the recipient does not elect to retain title, the Federal Government may either direct the recipient to sell the property and pay the Federal Government an amount computed by applying the Federal percentage of participation in the cost of the original project to the proceeds from the sale (after deducting actual and reasonable selling and repair or renovation expenses, if any, from the sale proceeds), or direct the recipient to transfer title to the Federal Government. If directed to transfer title to the Federal Government, the recipient shall be entitled to compensation computed by applying the recipient's percentage of participation in the cost of the original project to the current fair market value of the property; and

(iii) Fair market value of the property must be determined by an independent appraiser and certified by a responsible official of the state, as provided by Department of Commerce regulations at 15 CFR part 24, and Uniform Relocation Assistance and Real Property Acquisition for Federal and Federally assisted programs at 15 CFR part 11.

(f) Upon instruction by NOAA, provisions analogous to those of Sec. 921.21(e) shall be included in the documentation underlying less-than-fee-simple interests acquired in whole or part with Federal funds.

(g) Federal funds or non-Federal matching share funds shall not be spent to acquire a real property interest in which the state will own the land concurrently with another entity unless the property interest has been identified as a part of an acquisition strategy pursuant to Sec. 921.13(7) which has been approved by NOAA prior to the effective date of these regulations.

(h) Prior to submitting the final management plan to NOAA for review and approval, the state shall hold a public meeting to receive comment on the plan in the area affected by the estuarine research reserve. NOAA will publish a notice of the meeting in the Federal Register at least 15 days prior to the public meeting. The state shall be responsible for having a similar notice published in the local newspaper(s).

**Sec. 921.30 Designation of National Estuarine Research Reserves.**

(a) The Under Secretary may designate an area proposed for designation by the Governor of the state in which it is located, as a National Estuarine Research Reserve if the Under Secretary finds:

1. The area is a representative estuarine ecosystem that is suitable for long-term research and contributes to the biogeographical and typological balance of the System;
2. Key land and water areas of the proposed Reserve, as identified in the management plan, are under adequate state control sufficient to provide long-term protection for reserve resources to ensure a stable environment for research;
3. Designation of the area as a Reserve will serve to enhance public awareness and understanding of estuarine areas, and provide suitable opportunities for public education and interpretation;
4. A final management plan has been approved by NOAA;
5. An MOU has been signed between the state and NOAA ensuring a long-term commitment by the state to the effective operation and implementation of the area as a National Estuarine Research Reserve;
6. All MOU's necessary for reserve management (i.e., with relevant Federal, state, and local agencies and/or private organizations) have been signed; and
7. The coastal state in which the area is located has complied with the requirements of subpart B.

(b) NOAA will determine whether the designation of a National Estuarine Research Reserve in a state with a federally approved coastal zone management program directly affects the coastal zone. If the designation is found to directly affect the coastal zone, NOAA will make a consistency determination pursuant to Sec. 307(c)(1) of the Act, 16 U.S.C. 1456, and 15 CFR part 930, subpart C. See Sec. 921.4(b). The results of this consistency determination will be published in the Federal Register when the notice of designation is published. See Sec. 921.30(c).

(c) NOAA will publish the notice of designation of a National Estuarine Research Reserve in the Federal Register. The state shall be responsible for having a similar notice published in the local media.

(d) The term state control in Sec. 921.30(a)(3) does not necessarily require that key land and water areas be owned by the state in fee simple. Acquisition of less-than-fee simple interests e.g., conservation easements) and utilization of existing state regulatory measures are encouraged where the state can demonstrate that these interests and measures assure adequate long-term state control consistent with the purposes of the research reserve (see also Secs. 921.13(a)(7); 921.21(g)). Should the state later elect to purchase an interest in such lands using NOAA funds, adequate justification as to the need for such acquisition must be provided to NOAA.

**Sec. 921.31 Supplemental acquisition and development awards.**

After National Estuarine Research Reserve designation, and as specified in the approved management plan, a coastal state may request a supplemental acquisition and/or development award(s) for acquiring additional property interests identified in the management plan as necessary to strengthen protection of key land and water areas and to enhance long-term protection of the area for research and education, for facility and exhibit construction, for restorative activities identified in the approved management plan, for administrative purposes related to acquisition and/or facility construction and to develop and/or upgrade research, monitoring and education/interpretive programs. Federal financial assistance provided to a National Estuarine Research Reserve for supplemental development costs directly associated with facility construction (i.e., major construction activities) may not exceed 70 percent of the total project cost, except when the financial assistance is provided from amounts recovered as a result of damage to natural resources located in the coastal zone, in which case the assistance may be used to pay 100 percent of the costs. NOAA must make a specific determination that the construction activity will not be detrimental to the environment. Acquisition awards for the acquisition of lands or waters, or interests therein, for any one reserve may not exceed an amount equal to 50 percent of the costs of the lands, waters, and interests therein of \$5,000,000, whichever amount is less, except when the financial assistance is provided from amounts recovered as result of damage to natural resources located in the coastal zone, in which case the assistance may be used to pay 100 percent of all actual costs of activities carrier out with this assistance, as long as such funds are available. In the case of a biogeographic region (see appendix I) shared by two or more states, each state is eligible independently for Federal financial assistance to establish a separate National Estuarine Research Reserve within their respective portion of the shared biogeographic region. Application procedures are specified in subpart I. Land acquisition must follow the procedures specified in Secs. 921.13(a)(7), 921.21(e) and (f) and 921.81.

*[58 FR 38215, July 15, 1993, as amended at 62 FR 12540, Mar. 17, 1997; 63 FR 26717,*

*May 14, 1998].*

**Sec. 921.32 Operation and management: Implementation of the management plan.**

(a) After the Reserve is formally designated, a coastal state is eligible to receive Federal funds to assist the state in the operation and management of the Reserve including the management of research, monitoring, education, and interpretive programs. The purpose of this Federally funded operation and management phase is to implement the approved final management plan and to take the necessary steps to ensure the continued effective operation of the Reserve.

(b) State operation and management of the Reserves shall be consistent with the mission, and shall further the goals of the National Estuarine Research Reserve program (see Sec. 921.1).

(c) Federal funds are available for the operation and management of the Reserve. Federal funds provided pursuant to this section may not exceed 70 percent of the total cost of operating and managing the Reserve for any one year, except when the financial assistance is provided from amounts recovered as a result of damage to natural resources located in the coastal zone, in which case the assistance may be used to pay 100 percent of the costs. In the case of a biogeographic region (see Appendix I) shared by two or more states, each state is eligible for Federal financial assistance to establish a separate Reserve within their respective portion of the shared biogeographic region (see Sec. 921.10).

(d) Operation and management funds are subject to the following limitations:

1. Eligible coastal state agencies may apply for up to the maximum share available per Reserve for that fiscal year. Share amounts will be announced annually by letter from the Sanctuary and Reserves Division to all participating states. This letter will be provided as soon as practicable following approval of the Federal budget for that fiscal year.
2. No more than ten percent of the total amount (state and Federal shares) of each operation and management award may be used for construction-type activities.

*[58 FR 38215, July 15, 1993, as amended at 62 FR 12541, Mar. 17, 1997].*

**Sec. 921.33 Boundary changes, amendments to the management plan, and addition of multiple-site components.**

(a) Changes in the boundary of a Reserve and major changes to the final management plan, including state laws or regulations promulgated specifically for the Reserve, may be made only after written approval by NOAA. NOAA may require public notice, including notice in the Federal Register and an opportunity for public comment before approving a boundary or management plan change. Changes in the boundary of a Reserve involving the acquisition of properties not listed in the management plan or final EIS require public notice and the opportunity for comment; in certain cases, a categorical exclusion, an environmental assessment and possibly an environmental impact statement may be required. NOAA will place a notice in the Federal Register of any proposed changes in Reserve boundaries or proposed major changes to the final management plan. The state shall be responsible for publishing an equivalent notice in the local media. See also requirements of Secs. 921.4(b) and 921.13(a)(11).

(b) As discussed in Sec. 921.10(b), a state may choose to develop a multiple-site National Estuarine Research Reserve after the initial acquisition and development award for a single site has been made. NOAA will publish notice of the proposed new site including an invitation for comments from the public in the Federal Register. The state shall be

responsible for publishing an equivalent notice in the local newspaper(s). An EIS, if required, shall be prepared in accordance with section Sec. 921.13 and shall include an administrative framework for the multiple-site Reserve and a description of the complementary research and educational programs within the Reserve. If NOAA determines, based on the scope of the project and the issues associated with the additional site(s), that an environmental assessment is sufficient to establish a multiple-site Reserve, then the state shall develop a revised management plan which, concerning the additional component, incorporates each of the elements described in Sec. 921.13(a). The revised management plan shall address goals and objectives for all components of the multi-site Reserve and the additional component's relationship to the original site(s).

(c) The state shall revise the management plan for a Reserve at least every five years, or more often if necessary. Management plan revisions are subject to (a) above.

(d) NOAA will approve boundary changes, amendments to management plans, or the addition of multiple-site components, by notice in the Federal Register. If necessary NOAA will revise the designation document (findings) for the site.

**Sec. 921.40 Ongoing oversight and evaluations of designated National Estuarine Research Reserves.**

(a) The Sanctuaries and Reserve Division shall conduct, in accordance with section 312 of the Act and procedures set forth in 15 CFR part 928, ongoing oversight and evaluations of Reserves. Interim sanctions may be imposed in accordance with regulations promulgated under 15 CFR part 928.

(b) The Assistant Administrator may consider the following indicators of non-adherence in determining whether to invoke interim sanctions:

1. Inadequate implementation of required staff roles in administration, research, education/interpretation, and surveillance and enforcement. Indicators of inadequate implementation could include: No Reserve Manager, or no staff or insufficient staff to carry out the required functions.
2. Inadequate implementation of the required research plan, including the monitoring design. Indicators of inadequate implementation could include: Not carrying out research or monitoring that is required by the plan, or carrying out research or monitoring that is inconsistent with the plan.
3. Inadequate implementation of the required education/interpretation plan. Indicators of inadequate implementation could include: Not carrying out education or interpretation that is required by the plan, or carrying out education/interpretation that is inconsistent with the plan.
4. Inadequate implementation of public access to the Reserve. Indicators of inadequate implementation of public access could include: Not providing necessary access, giving full consideration to the need to keep some areas off limits to the public in order to protect fragile resources.
5. Inadequate implementation of facility development plan. Indicators of inadequate implementation could include: Not taking action to propose and budget for necessary facilities, or not undertaking necessary construction in a timely manner when funds are available.
6. Inadequate implementation of acquisition plan. Indicators of inadequate implementation could include: Not pursuing an aggressive acquisition program with all available funds for that purpose, not requesting promptly additional funds when



necessary, and evidence that adequate long-term state control has not been established over some core or buffer areas, thus jeopardizing the ability to protect the Reserve site and resources from offsite impacts.

7. Inadequate implementation of Reserve protection plan. Indicators of inadequate implementation could include: Evidence of non-compliance with Reserve restrictions, insufficient surveillance and enforcement to assure that restrictions on use of the Reserve are adhered to, or evidence that Reserve resources are being damaged or destroyed as a result of the above.

8. Failure to carry out the terms of the signed Memorandum of Understanding (MOU) between the state and NOAA, which establishes a long-term state commitment to maintain and manage the Reserve in accordance with section 315 of the Act. Indicators of failure could include: State action to allow incompatible uses of state-controlled lands or waters in the Reserve, failure of the state to bear its fair share of costs associated with long-term operation and management of the Reserve, or failure to initiate timely updates of the MOU when necessary.

**Sec. 921.41 Withdrawal of designation.**

The Assistant Administrator may withdraw designation of an estuarine area as a National Estuarine Research Reserve pursuant to and in accordance with the procedures of section 312 and 315 of the Act and regulations promulgated there under.